NOVEMBER 1954

The Paper Industry

Nalco 680

STABILIZED *Sodium Aluminate*

100% Soluble

100% Stable • 100% Available

NALCO 680 is *completely* soluble, *completely* stable... the one sodium aluminate that remains in solution as sodium aluminate and does not settle out.

Every ounce of Nalco 680 provides active alkaline alumina... always available for rapid reaction. That means reduced alum requirements, lower acidity, better sizing, better retention, and therefore, better products.

Read the results reported at right—then ask a Nalco Representative to show you how Nalco 680 can repeat them in your mill.

BOX BOARD MILL—Power Savings

"Machine tenders report much better sheet formation with Nalco 680, and that jordans can be cut back 10 amps. Machines are cleaner with no deposits on cylinders."

KRAFT MILL—Alumina Retention

"Improvement in sizing, better retention of alumina, and general texture of the sheet using Nalco 680 are very marked. Converter reports the sheet handles better."

SULFITE BOND MILL—45% Less Alum

"Results using Nalco 680 at the rate of five pounds per ton have been good. Improved sizing and reduced alum from 250 to 140 pounds per 4500 pounds of furnish. This enabled the mill to meet rigid pH specifications for the paper."

TISSUE MILL—Clean Machines

"No. 6 paper machine remaining clean and generally good results through the use of Nalco 680 applied at the rate of four pounds per ton."

NATIONAL ALUMINATE CORPORATION

6232 W. 66th Place • Chicago 38, Illinois

Canadian inquiries should be addressed to Alchem Limited, Burlington, Ontario

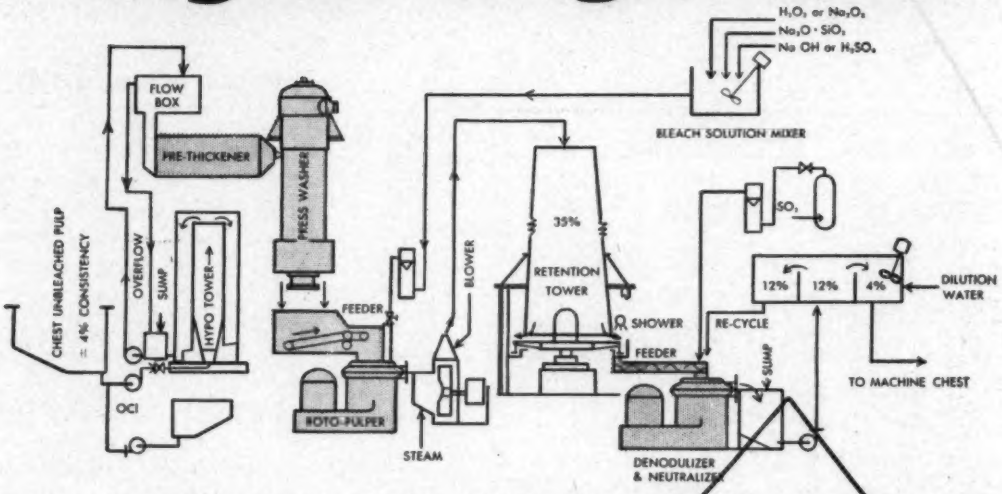
Nalco SYSTEMS

...Serving the Paper Industry through Practical Applied Science

both...

ost

higher brightness



in the new J-C groundwood bleaching system!

For four years J-C's single stage groundwood bleaching system has provided high brightness at reduced costs for various mills.

Now a new and better process . . . the dual-stage system . . . has been perfected by J-C engineers to give outstanding savings in chemical consumption and greater increases in brightness.

Look over this list of reasons and see for yourself how this new process produces a better product at a far lower cost.

fully continuous, precision controlled system
low initial investment
much lower operating costs per ton
minimum floor space
sharply reduced yield loss
maximum brightness
minimum color reversion
unchanged pulp physicals
one operator per shift
freedom from knots and "fish eyes"

Your nearest J-C representative will tell you how it is done!

The Taylor Corp.
46 Trinity Place
New York 6, N. Y.
Phone BO 9-6496

Homad Services Ltd.
1445 Crescent St.
Montreal 25, P.Q.
Phone Belair 5419

John D. Homan
714 S. Orleans Ave.
Tampa 6, Fla.
Phone Tampa 8-3952

M. O. Grove & Co.
310 Sacramento St.
San Francisco 11, Calif.
Phone Yukon 6-1611

Jas. Brinkley & Co.
417 Ninth Ave. So.
Seattle 4, Wash.
Phone Maine 0062

Frank C. Bacon
3276 W. 32nd Ave.
Vancouver 8, B.C.
Phone KE-7098

J-C

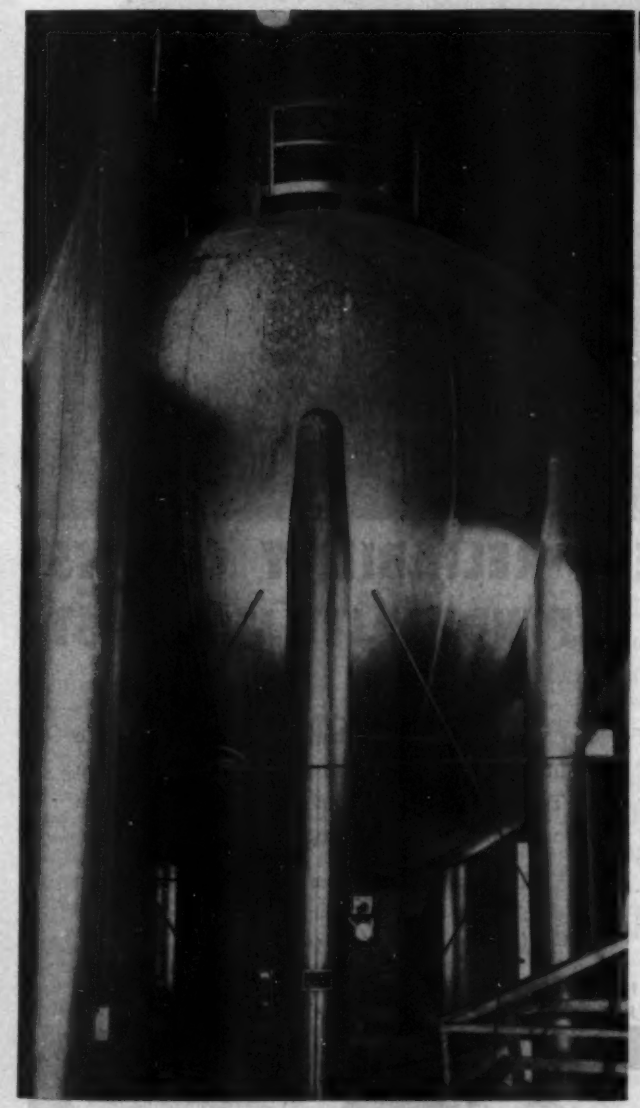
JACKSON & CHURCH CO. SAGINAW, MICHIGAN

Work well done since eighty-one

HORTON

Spherical Acid Accumulators

helps boost production 10 per cent at Sulphite Mill . . .



Horton welded steel spherical acid accumulators built by Chicago Bridge & Iron Company for the Groveton Papers Company, Groveton, N. H.

with a great savings in

- Acid
- Limestone
- Sulphur
- Steam

Shown at left is a partial view of two Horton® spherical acid accumulators installed for the Groveton Papers Company, Groveton, N.H. The accumulators, which are part of a Hot Acid Recovery System designed by Chemi-Pulp, Inc., of Watertown, New York, are used to store sulphite liquor which is used in the sulphite digesters.

Storage of the sulphite liquor in the welded steel pressure vessels maintains its acid strength and eliminates unnecessary refortification. This leads to a great savings in sulphur, limestone, and steam. The entire system has increased sulphite production about 10 per cent.

These Horton spherical acid accumulators are typical examples of the type of steel plate work that CB&I is equipped to build for the pulp and paper industry. We also design, fabricate and erect chip tanks, pulp tanks, blow tanks, elevated water tanks and Marx Savealls. Our shops are equipped for X-raying and stress relieving and we have facilities for pickling and painting fabricated steel plate work by the Horton phosphoric acid process.

Estimates or quotations on any Horton structure may be had by writing our nearest office. There is no obligation on your part.

CHICAGO BRIDGE & IRON COMPANY

Atlanta, 3.....2143 Healey Building
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Philadelphia, 3....1653—1700 Walnut Street Building
Pittsburgh, 19.....3231 Alcoa Building
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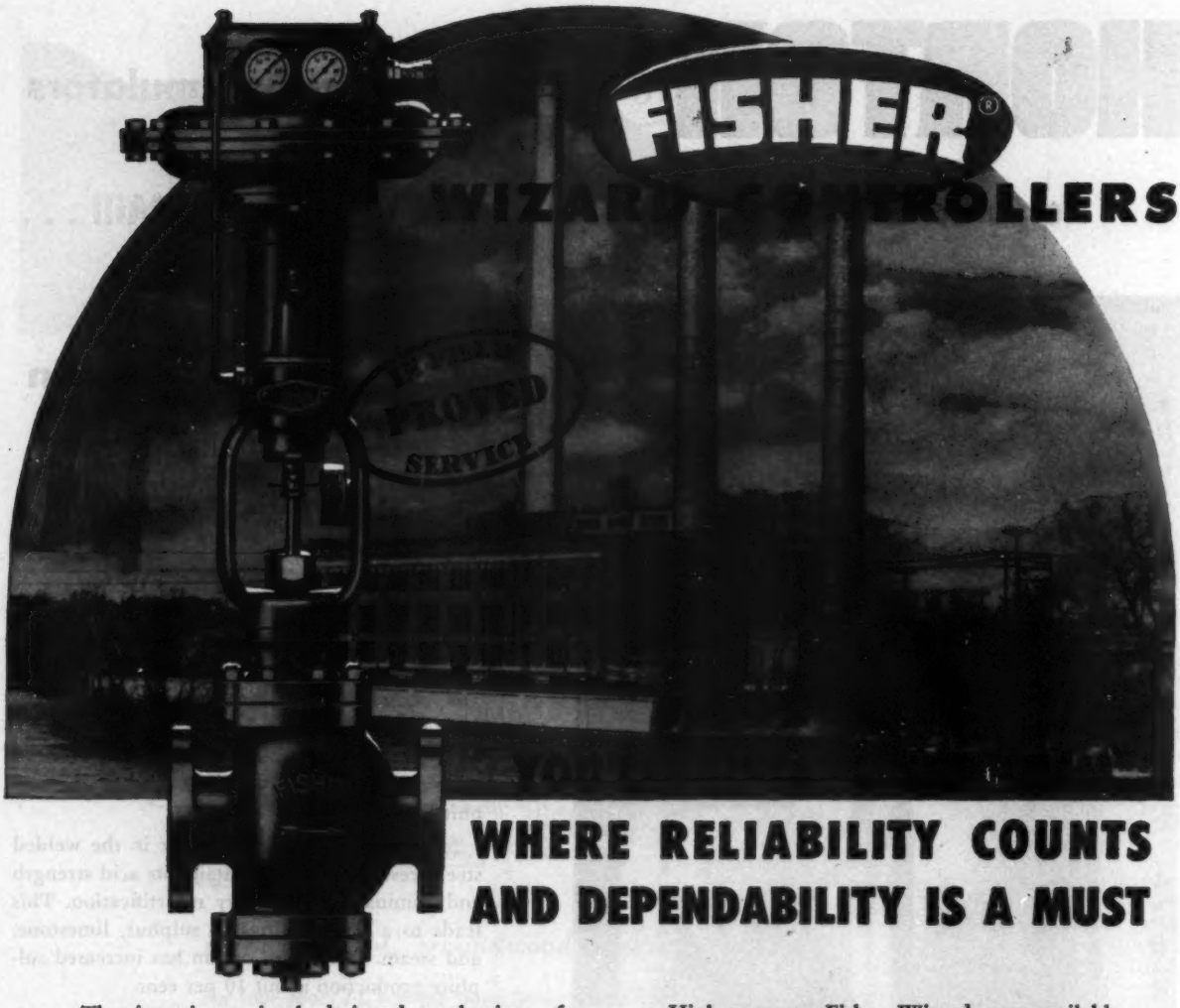
Plants in BIRMINGHAM, CHICAGO, SALT LAKE CITY, and GREENVILLE, PA.

In Canada: HORTON STEEL WORKS LIMITED, FORT ERIE, ONT.



WHERE RELIABILITY COUNTS AND DEPENDABILITY IS A MUST

The ingenious, simply-designed mechanism of Fisher Wizard Controllers provides extreme accuracy and dependability in pressure control.

Fisher Wizard Controllers will completely solve your pressure control problems. They are individually built to meet your exact operating conditions, and are guaranteed to give satisfactory performance.

High pressure Fisher Wizards are available in throttling and snap acting types. Bourdon Tube pressures from 5 to 5,000 P.S.I. Diaphragm or remote panel mounting.

Low pressure Fisher Wizards available in diaphragm or remote panel mounting. Bellows pressures from ½ to 15 P.S.I.

FISHER LEADS THE INDUSTRY IN RESEARCH FOR BETTER PRESSURE CONTROL

HIGH PRESSURE
Bourdon tube pressures from 5 to 5,000 P.S.I.

LOW PRESSURE
Bellows pressure from ½ to 15 P.S.I.

FISHER GOVERNOR COMPANY Marshalltown, Iowa

The Paper Industry

Technology • Engineering • Management • Production

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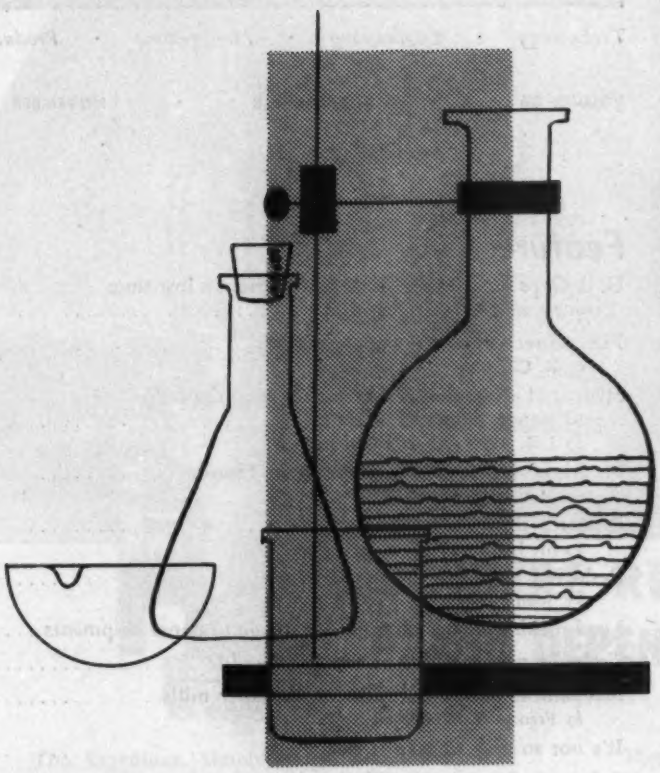


Better Felts through. . .

Research!

The quality being built into Appleton Felts today is predicated to a great degree on the work of a nationally recognized independent research organization. It is a service designed to help solve all of your felt problems.

...and Appleton Felts make good paper!

APPLETON WOOLEN MILLS
APPLETON, WISCONSIN

NEW, easy-to-use catalog of all standard products available from this single source

340 pages of selection and application data on chains and sprockets, other power transmission and conveyor products

IF you are among the thousands who have received Catalog No. 950 from your Link-Belt representative or distributor, chances are you've already discovered how this "encyclopedia" represents an unequalled range of choice—because no other source offers such a complete line of standard related products for mechanical power transmission, conveying, elevating and processing applications. You profit, too, because of Link-Belt's specialized engineering experience and advanced manufacturing methods. If you don't have a copy, send your request on your firm's letterhead to your Link-Belt office or distributor or to Link-Belt Company, 307 N. Michigan Ave., Chicago 1, Ill.

At your fingertips — full facts on all these quality products

Chains—cast, combination, forged and steel sidebar and attachments, with arm or plate center cast sprockets. *Precision steel roller chains and sprockets. Silent chains and sprockets.* Castings, tighteners, wing and swivel attachments.

Enclosed drives—P.I.V. variable speed and fluid drives, gearmotors and motogears, parallel shaft and worm gear drives.

Bearings—ball, roller, babbitted and bronze. *Rigid and flexible couplings.* Take-ups, hangers, bushings, pulleys, gears, clutches, backstops, shear pin hubs, collars, grease cups.

Processing equipment—vibrating screens, icing equipment.

Conveyors—Flexmount oscillating and piano-hinged apron. *Components* for screw, belt and trolley conveyors. *Car spotters and pullers. Power unloading scoops. Bucket elevators and elevator buckets.*

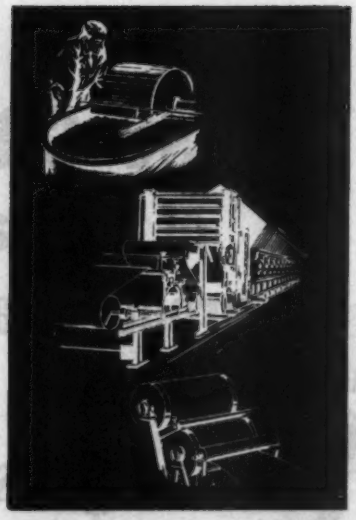
Other products—cast and cut tooth sprocket wheels, taper lock bushings, spray nozzles, gates, cutoff valves, winches.

13,000-R

LINK-BELT

One source . . . one responsibility for materials handling and power transmission machinery

LINK-BELT COMPANY: Executive Offices, 307 N. Michigan Ave., Chicago 1. To Serve Industry There Are Link-Belt Plants, Sales Offices, Stock Carrying Factory Branch Stores and Distributors in All Principal Cities. Export Office: New York 7; Canada, Scarboro (Toronto 13); Australia, Marrickville, N.S.W.; South Africa, Springs. Representatives Throughout the World.



HERCULES® STARCH meets all specifications for...

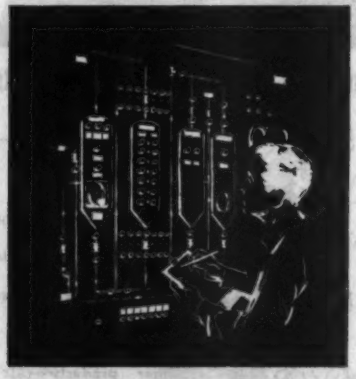
Beater Additive! Hercules Starch is especially effective in improving the retention and effectiveness of the rosin size.

Surface Sizing! Hercules Starch is a natural for this use. It imparts an improved printing surface with a better "pick test", and higher Mullen Factor.

Paper Coating! Hercules Starches make clear, more permanent films, and have greater uniformity from batch to batch. *We modify these starches to suit any coating equipment.*

Calender Sizing! Hercules Starch is highly recommended for surface improvement. It is miscible with wax size and yields a paper board suitable for printing with gloss ink.

HERCULES STARCH FOR QUALITY PAPER



Controlled manufacture...

Hercules is manufactured by a newly perfected mechanical process. This new technique reduces human error and provides absolute control of product quality. Hercules is the ONLY starch produced by this method. Hercules is especially refined to help speed production, reduce "Down Time". It imparts a desirable snap and rattle to paper. In board manufacture Hercules starches give you a higher quality board.

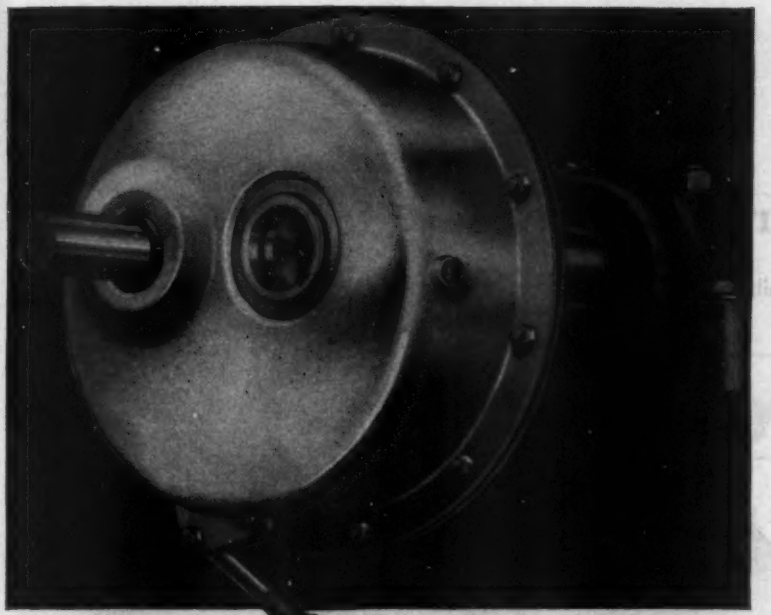
Quick delivery...

The particular Hercules Starch you want is yours when you want it, in amounts required by your production schedules.

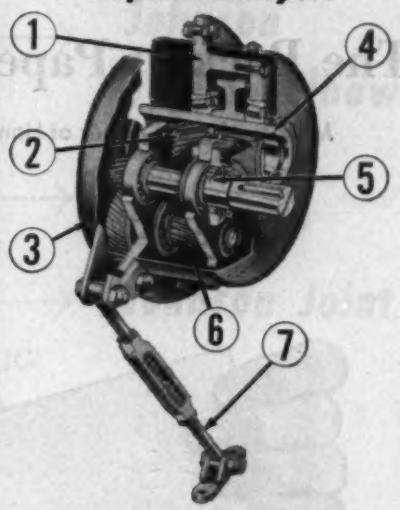
Service to the industry...

Take advantage of our free technological service. Our field and laboratory experts welcome an opportunity to help you solve your problems. Please write today.

Corn Products Refining Company
17 Battery Place, New York 4, N. Y.



These famous FALK "In-built" factors *mean long life and dependability...*



SIX SIZES
- 1/2 to 30 hp
- Single or double reduction
- Wide output speed range—420 to 10 rpm

FALK
ALL-STEEL
Shaft Mounted Drives—
simple-compact-rugged-efficient

Created specifically for the vast number of applications demanding a sturdy and compact speed-reducing unit for direct mounting on the driven shaft, the new Falk all-steel Shaft Mounted Drive is built to give long service life at substantial savings of space, time, power and maintenance costs!

This efficient helical-gear drive, latest in the unmatched list of Falk precision-gearing achievements is an ingenious modification of the time-tested Falk Motoreducer design which has held, for more than 20 years, recognized leadership in this branch of highest-quality power transmission . . . It complements and completes the world-famous Falk line of reduction units covering the entire range of industrial applications.

Investigate the Falk all-steel Shaft Mounted Drive. Write to Department 247 for engineering bulletin, including selection and dimension details.

1 **All-steel Frame,** with more than double the rigidity of iron, supports all rotating elements.

2 **Precision Helical Gears,** designed and machined by Falk, rated to AGMA standards.

3 **Pressed Steel Housings,** whose sole function is to keep oil in, dirt out; easily removed for gear inspection without dismounting unit.

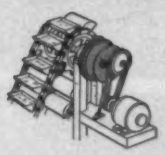
4 **Through Hollow Shaft** with counter bore provides for easiest installation or removal from driven machine shaft extensions.

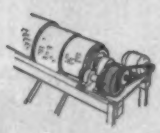
5 **Backstop** can be furnished with the unit or added later for positive prevention of reverse rotation.

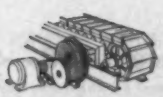
6 **Positive Lubrication,** continuous direct dip of revolving elements at all speeds.

7 **Tie Rod** and turnbuckle serve as anchor and facilitate V-belt or chain adjustment.

A FEW TYPICAL APPLICATIONS


BUCKET ELEVATOR


SAND CLASSIFIER


APRON FEEDER

BELT CONVEYOR

THE FALK CORPORATION, Milwaukee 8, Wisconsin

MANUFACTURERS OF

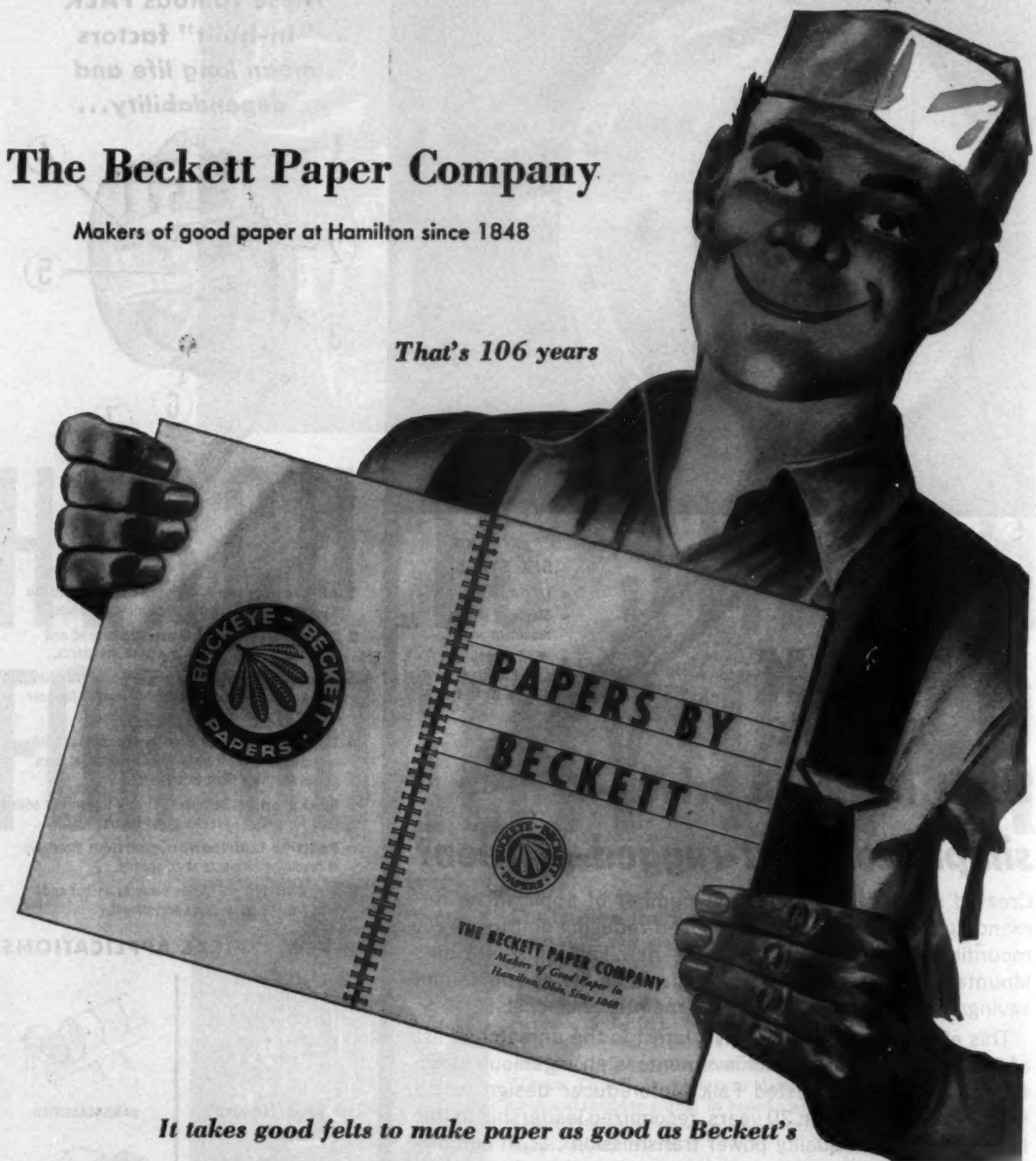
- Motoreducers
- Speed Reducers
- Flexible Couplings
- Shaft Mounted Drives
- High Speed Drives
- Special Gear Drives
- Single Helical Gears
- Herringbone Gears
- Marine Drives
- Steel Castings
- Weldments
- Contract Machining

FALK
. . . a good name in industry

The Beckett Paper Company

Makers of good paper at Hamilton since 1848

That's 106 years



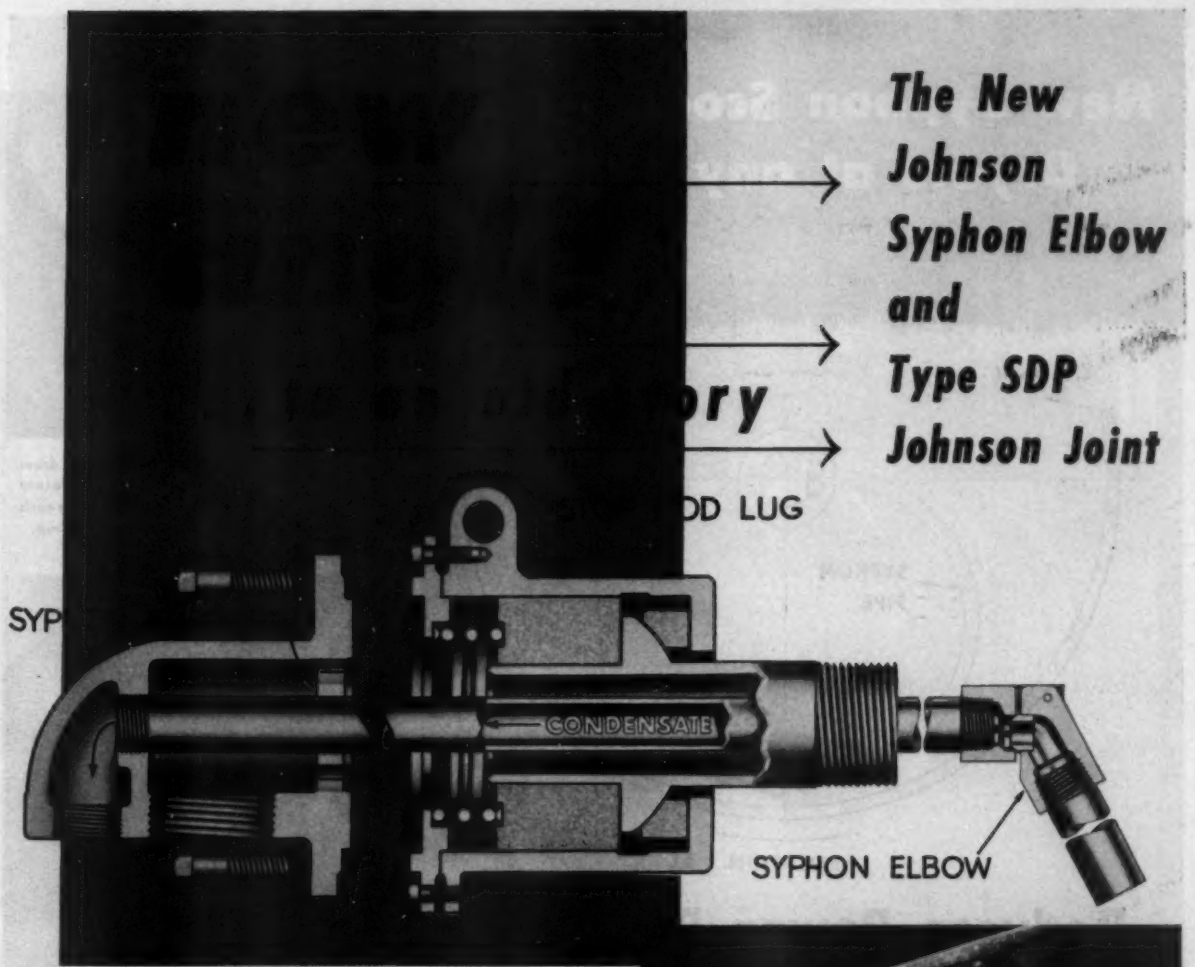
It takes good felts to make paper as good as Beckett's

Since 1858—that is 96 years—Beckett has been a regular user of . . .

Hamilton Felts

MIAMI WOOLEN MILLS *Established 1858*

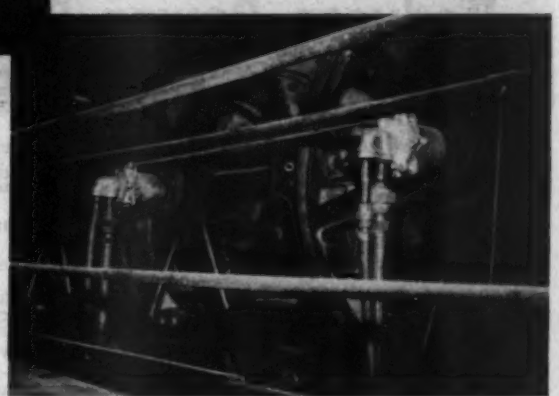
SHULER & BENNINGHOFEN, HAMILTON, OHIO



Curved syphon pipes can be a nuisance sometimes. They are hard to form, hard to handle, hard to keep in place.

The Johnson Mechanical Syphon Elbow changes all this. It permits use of straight pipe . . . can be inserted or withdrawn right through the joint . . . seats by its own weight when in position.

In the picture above you see this new syphon elbow as teamed up with the Type SDP Johnson Joint—perhaps the most popular combination of its type in the paper industry. It needs no external supports of any kind. It is completely packless and self-lubricating. A special assembly plate holds internal parts in position when head is removed with the syphon pipe.



TYPE SDP JOHNSON JOINTS, with ¾" syphon elbows, installed on paper machine. Joints need no external supports. Syphon elbow can be inserted or withdrawn through the joint, in many cases while machine is operating.

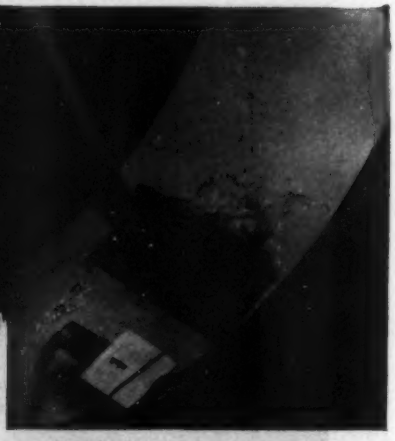
We'll gladly furnish a couple of units for 90 day trial right in your own plant. Write for full information.

Products of The

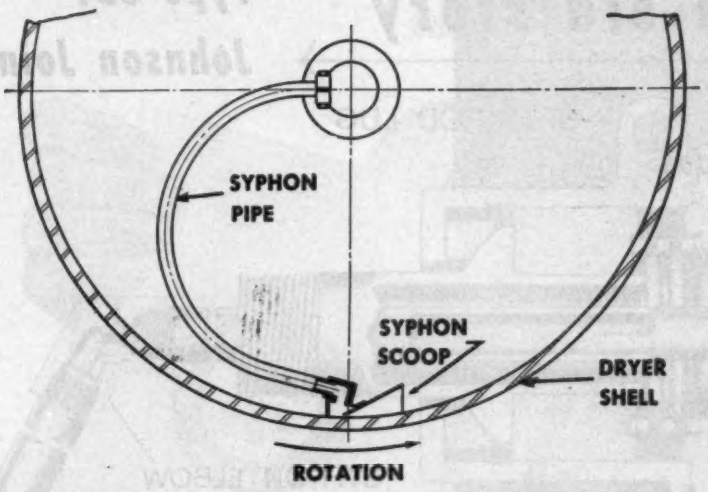
845 Wood St., Three River, Mich.

Rotary Pressure Joints • Compressed Air Separators and Aftercoolers
Direct Operated Solenoid Valves • "Instant" Steam Water Heaters

New Syphon Scoop Drains Dryers at any Speed



SLOW SPEED—210 fpm. Photo of test drum shows that water is almost completely scooped from the bottom of the drum by each revolution of the Armstrong Syphon Scoop.



FASTER—810 fpm. Water carried well up the inside surface of the drum. Still there is no water accumulation because of the scooping action.

Reduces Power Required; Increases Heat Transfer

The new Armstrong Syphon Scoop operates efficiently at any speed. The opening of the Syphon Scoop, which is only 1/16" away from the shell, removes all condensate at low speeds. At rimming speeds, there can be only 1/16" film.

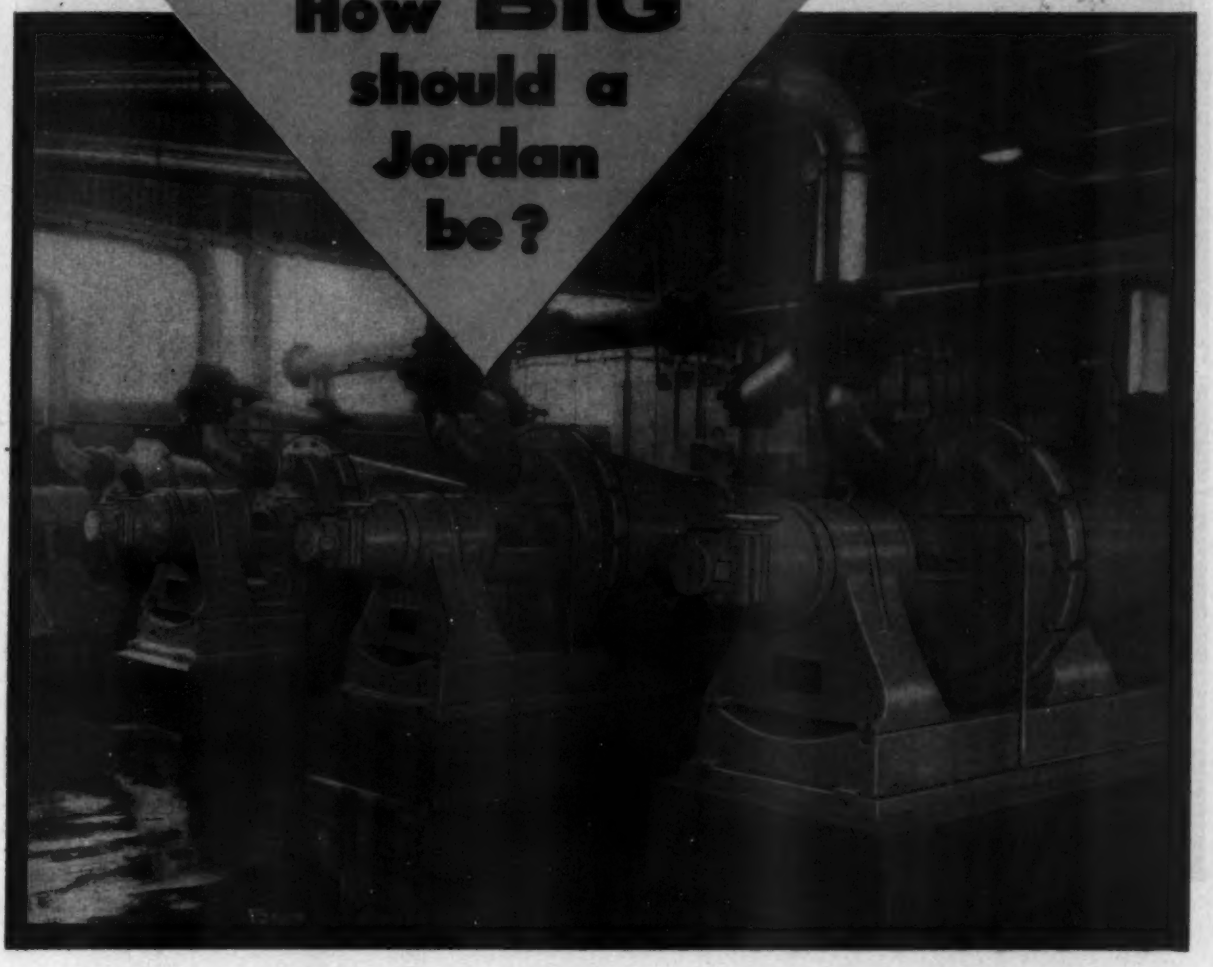
With Armstrong Syphon Scoops your dryers will not carry heavy loads of condensate that require excessive driving power. And there is a bonus of higher surface temperatures that will give you profitable extra capacity.

SEND FOR TEST REPORT NO. 1 — how Syphon Scoop drained 110 gallons of condensate from kraft paper face dryer in 3½ hours compared to 25 gallons for stationary syphon. Free on request without obligation.

1200 FPM—water "rimming". *Still almost no water in the drum. The Syphon Scoop now acts purely as a revolving syphon, but, unlike ordinary syphons, it removes the water down to within 1/16" of inner surface of drum.*

ARMSTRONG MACHINE WORKS
816 Hoffman Street • Three Rivers, Michigan
STEAM TRAPS . . . PAPER MACHINE MOISTURE CONTROL . . . INDIVIDUAL DRYER TEMPERATURE CONTROL . . . STEAM HUMIDIFIERS

How BIG should a Jordan be?



Battery of Jones Majestic Jordans at Weyerhauser's Longview, Wash., board mill. This popular high-capacity machine accounts for a large percentage of Jones Jordan sales.

Big enough to do the job required of it! — and the Jones line of eight sizes, from Midget to Leviathan permits selection of exactly the right size and type to meet every requirement.

Built into *all* Jones Jordans are exclusive features developed from more than a century of service to paper mills, which provide maximum operating efficiency, ease of maintenance and low operating cost.

Ask your Jones representative for more information, or write today for Bulletin EDJ-1007A.

E. D. Jones

E. D. Jones & Sons Company
Pittsfield, Massachusetts

BUILDERS OF QUALITY STOCK PREPARATION EQUIPMENT

In Canada: The Alexander Fleck Limited, Ottawa

SECOND WORTHINGTON TURBINE GENERATOR installed at the Kohler Co. in Kohler, Wisconsin. Steam is extracted from this 6000-kw unit at the rate of 120,000 lb/hr. at 225 psi and 80,000 lb/hr. at 5 psi.

KOHLER OF KOHLER selects Worthington again

In 1949, Kohler of Kohler, manufacturers of plumbing fixtures, heating equipment, electric plants, air cooled engines and precision controls, installed their first Worthington turbine generator.

The 3000-kw Worthington unit operated in parallel with the outside power supply and delivered the rated kw load while automatically extracting 120,000 lbs. of steam per hour at 225 psi for heating and process work.

Because of the extremely economical and dependable operation of this machine, another Worthington turbine generator was the logical choice when power requirements increased. In November of 1952, a 6000-kw Worthington turbine generator was installed.

Now the two Worthington units furnish process steam for the plant and also supply a large part of their electrical requirements.

Follow the lead of Kohler and find out how Worthington turbine generators can pay off for you, too. Write to Worthington Corporation, Steam Turbine Division, Section T.4.5, Wellsville, New York.

T.4.5

WORTHINGTON

STEAM TURBINES

Single- and Multi-Stage Turbines • Turbine-Generators • Deaerators • Boiler Feed Pumps • Surface Condensers

A GREAT TEAM IN STEAM

Papermaking Went Into High Gear With This Machine in 1798...

An important event in the history of papermaking was Nicholas-Louis Robert's invention of the paper machine over a century and a half ago. No longer would the slow methods of forming paper by hand limit size and quantity of paper sheets. Robert's machine formed paper of continuous length upon an endless woven-wire cloth which retained the matted fibers. Today more complex machines, operating on the same principle, produce a tremendous volume of paper. Helping maintain its quality are high-grade raw materials produced by A. E. Staley Manufacturing Company, supplier to leading mills for more than 30 years. Discover the many advantages Staley can offer *you*. See your supplier or write for details today.

Quality Staley® Products for Papermakers

Staley Sizing Starches
A full range of starches and dextrins for beater, surface and calender sizing.

Staley Corrugating and Laminating Adhesives
Corrugating starches, special laminating and bag adhesives.

Staley Coating Adhesives
Starches and Dextrins give better results for machine or regular brush coating.

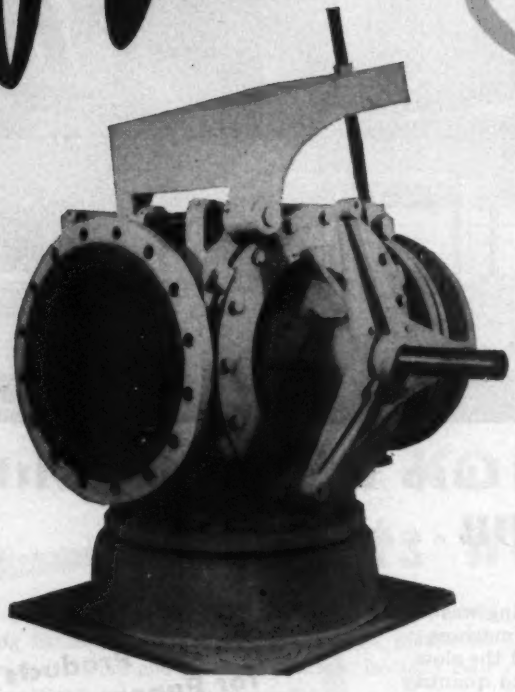
Staley Plasticizers
"Sweetose"® and Staley's corn syrup are ideal softening agents for glassine paper.

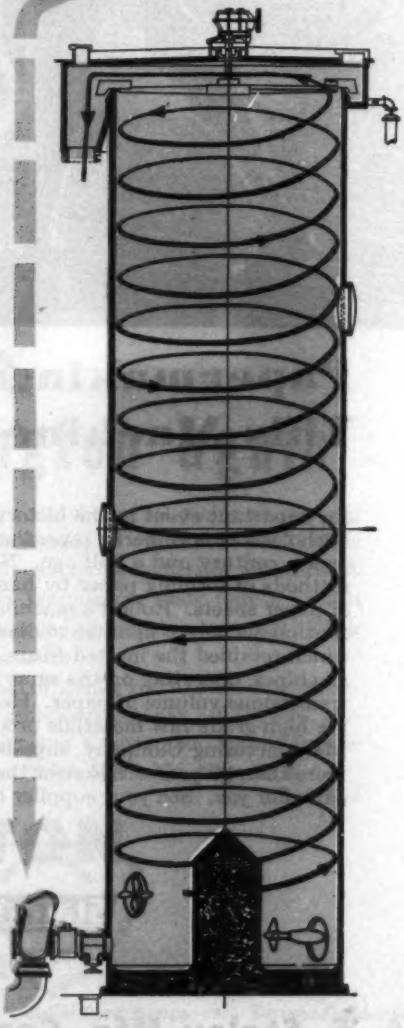
PRODUCTS FROM CORN
Staley's

A. E. Staley Mfg. Company, Decatur, Ill.

Good Bleaching

STARTS HERE





IMPCO CHLORINE SAVER-MIXER

A new high intensity type chlorine mixer which gives a quick intimate mixing result, improving retention in the main tower and insuring uniformly chlorinated pulp.

This unit showed chlorine savings of 50c per ton or at a 300 ton daily production rate, over $40,000 per year, paying for the mixer in just a few months.

IMPROVED
MACHINERY INC.

Sherbrooke Machineries Ltd. Sherbrooke, Quebec manufacture similar equipment in Canada.

C3-a

" You see Powell Valves everywhere! And with . . .

. . . good reason! They're famous for dependability. Economical, too.
What's more, Powell has a complete line."

Famous for dependability

SINCE 1846

Wherever flow requires dependable control, there's *the* place for Powell Valves. Powell probably makes more kinds of valves and has solved more valve problems than any other organization in the world.

Available through distributors in principal cities. Made ⅛" to 30" and for 125 pounds to 2500 pounds W.S.P. Bronze, iron, steel and corrosion-resistant metals and alloys. On problems, write direct to The Wm. Powell Company, Cincinnati 22, Ohio.

CONTROLS FOR THE LIFE LINES OF INDUSTRY

Powell Valves

108th year

CUT YOUR BILLS TO

YOU GET MORE FOR YOUR DOLLAR WHEN YOU ORDER A SHIPMENT OF PEXOL FORTIFIED SIZE

There are many good reasons why Pexol outsells any other fortified size on the market. Not the least of these is Hercules' unequaled service facilities, which provide every Pexol user with the advantages of a product tailored to his needs. Hercules' technical representatives, trained for service to the paper making industry *exclusively*, are available to visit your plant, study your operating conditions, and recommend a Pexol formulation that will give optimum solubility, overall sizing efficiency and low foam index. Such service is a Hercules "plus"—insures the most for your sizing dollar *in actual use!*

FACTS ABOUT FOAM

There has been much comment about foam caused by rosin size. The simple fact is: **NO OTHER FORTIFIED SIZE HAS A LOWER FOAM INDEX THAN HERCULES PEXOL**, and at an equal degree of fortification no other size can even approach it.

RESEARCH FACILITIES

The finest research facilities possible, devoted exclusively to paper making chemicals and their application, are available in helping you improve your product or processing methods. Trained technicians in the laboratory back up Hercules' technical representatives in the field—put at your disposal over forty years of experience in solving paper making problems.

VARIETY

No one size, dry or paste, can possibly fit every requirement. That's why Pexol is available in both paste and dry forms, and in numerous types. Or, if your needs are unusual, Hercules will develop special modifications of existing formulations to meet specific conditions.

ECONOMY

Pexol brings reductions in size furnish . . . often as high as 30 to 50%. That means lower inventories, reduced freight and handling cost. Yet sizing tests are maintained . . . often improved. In every way, Pexol is a balanced fortified size that gives the most of all desirable properties—the most for your sizing dollar!

RESULTS

The final test of any size is how well it works for *you*. Pexol outsells all other fortified sizes. To maintain such a record, it *must* give results! If you're among the few who haven't yet tried Pexol, contact your Hercules technical representative. He'll be glad to demonstrate what you've been missing.

Paper Makers Chemical Department

HERCULES POWDER COMPANY
INCORPORATED

961 King St., Wilmington 99, Delaware

FOR OPTIMUM SIZING EFFICIENCY, SOLUBILITY, AND LOW FOAM INDEX . . .

SIZE WITH PEXOL

HERCULES **PEXOL**®

FORTIFIED SIZE

F.C.HUYCK & SONS
KENWOOD MILLS

What is the difference between a sales representative and a salesman?

There is more to a Huyck salesman than selling, for Huyck believes that only men who specialize in felts and papermaking are adequately equipped to sell felts to papermakers.

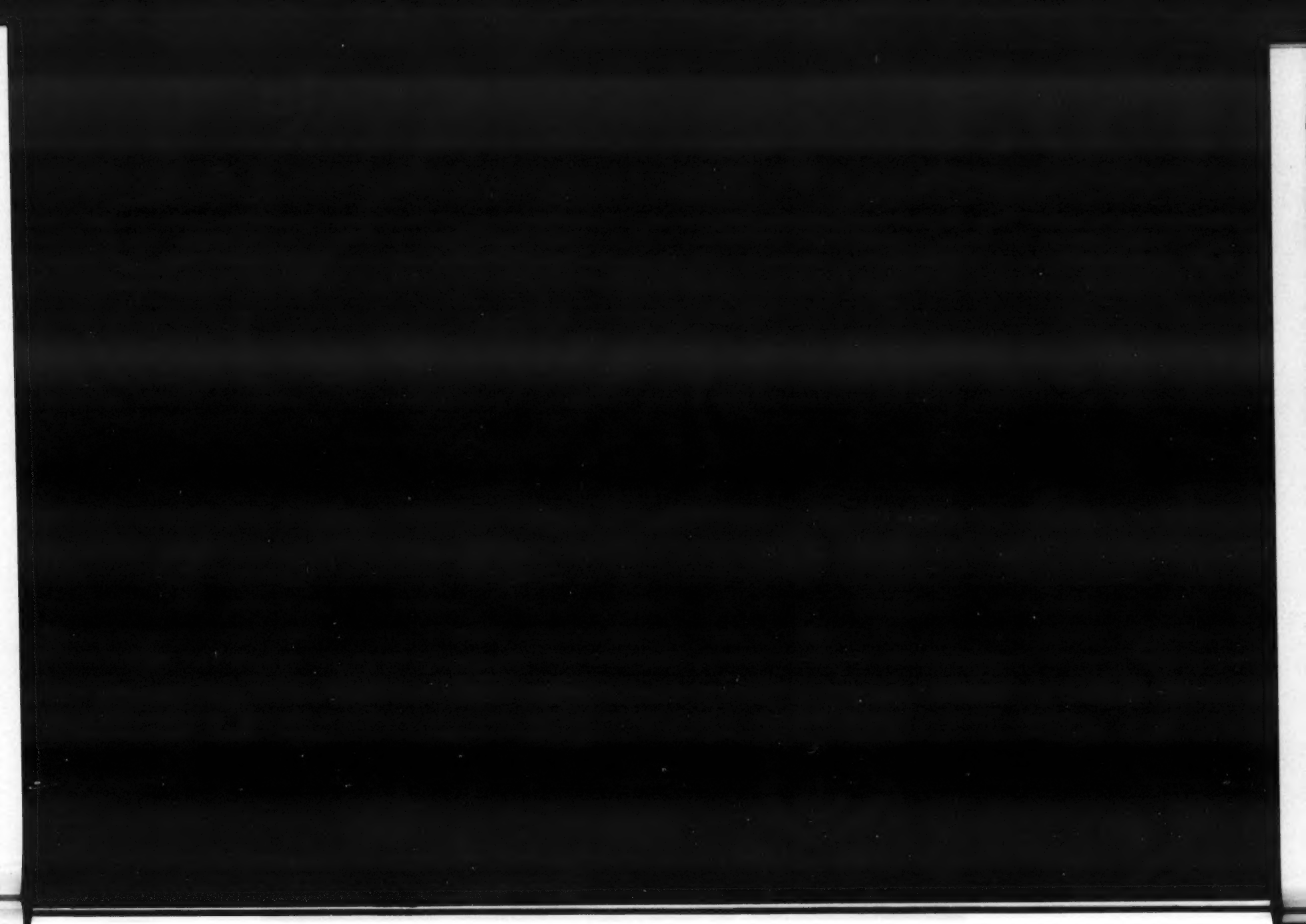
Through long association with the paper industry, every Huyck salesman knows papermaking. By virtue of thorough training in our mills, he is well versed in the know-how of felt manufacturing. Thus, he is not only a salesman, but a true specialist who understands both your felt requirements and felt design application. The result—maximum felt efficiency at lowest cost per ton.

Consider service carefully when you buy felts: it must always be complete and dependable. As the Huyck service record proves, Huyck felts—with Huyck service—mean better production and lower costs for you.

Just released—another in the series of Huyck felt bulletins, Volume II. Where shall we send your copies?

HUYCK FELTS
first in quality...
first in service

F. C. HUYCK & SONS — Established 1870 — Rensselaer, N. Y.



YOU GET MORE MILS PER GALLON WITH AMERCOAT 33

Amercoat's higher solids content gives you a thicker, heavier coating—more mils for every gallon applied.

THIS MEANS YOU SAVE MONEY TWO WAYS ON MAINTENANCE PAINTING

Lower Material Cost. You save on material because it takes fewer coats of AMERCOAT 33 to build the required film thickness.

Lower Labor Cost. You save on labor because fewer coats mean fewer man hours for application–less down time, too.

In addition to more mil thickness per gallon, you get more protection per gallon. AMERCOAT 33 is formulated specifically for maximum chemical resistance and for severe weathering conditions. In major industries from coast to coast – chemical, petroleum, pulp and paper, food, and many others – maintenance engineers look to AMERCOAT 33 for low cost, long lasting protection for all types of steel or concrete structures.

Amercoat pioneered the development of protective coatings especially designed for severe corrosion problems. Today it is the only organization that offers you... a complete line of corrosion resistant coatings...nationwide distribution... trained technical men to give you on-the-job assistance throughout the United States and Canada.

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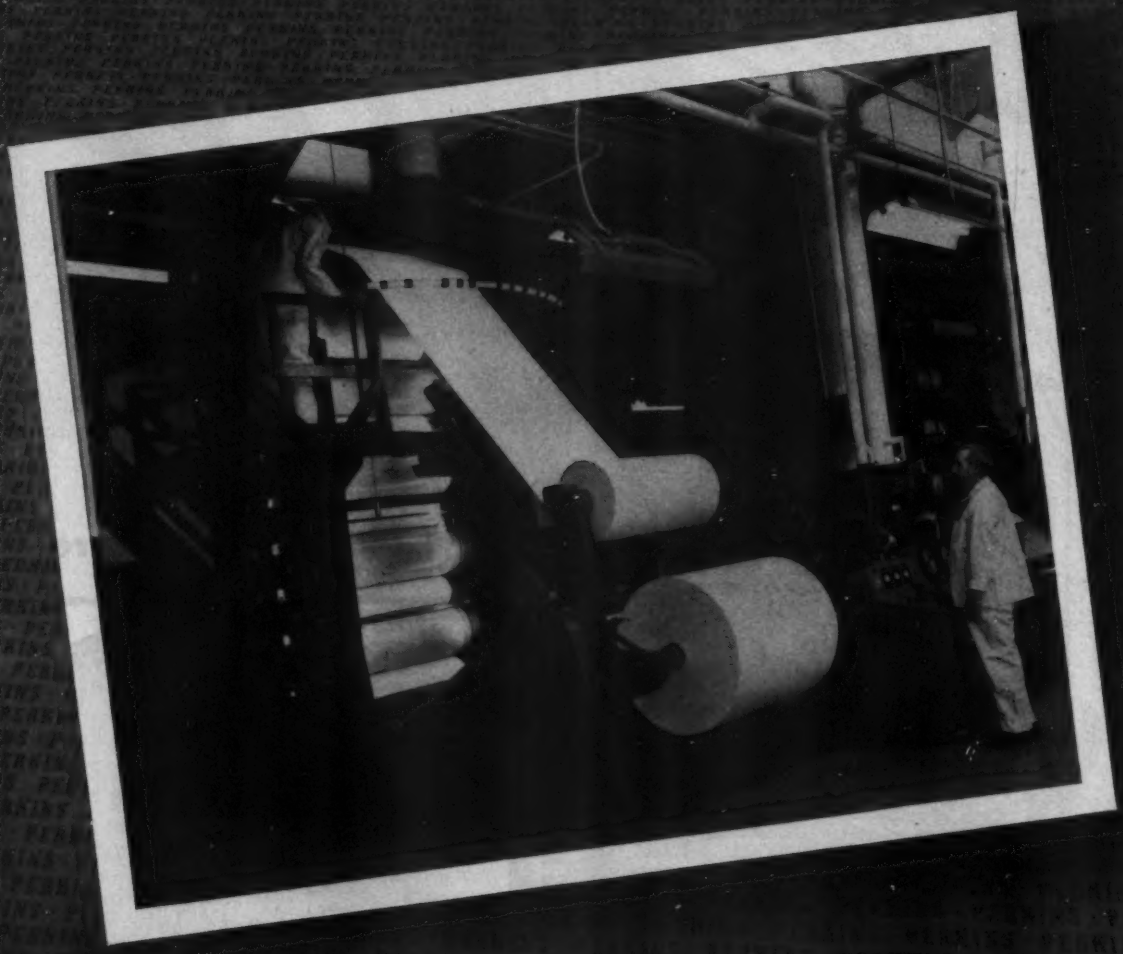
Write today for the AMERCOAT 33 Technical Bulletin which gives a complete description of the coating's chemical and physical properties.



Photograph Paper Must Have Perfect Finish

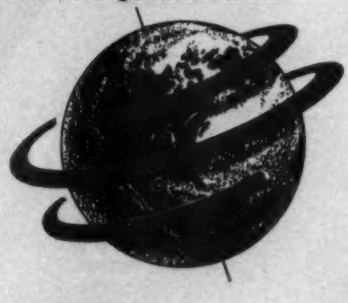
— And here is a Perkins 50" Nine-Roll Web Supercalender, made for Eastman Kodak Company finishing world famous photographic printing papers at high speed . . . Operating nip pressure 2,000 pounds per lineal inch at the bottom nip . . . five (5) Farreloy chilled iron rolls, ground to a .5 micro-inch finish . . . four (4) Perkins cotton rolls . . . Timken roller bearings . . . gravity feed lubrication . . . hydraulic pressure . . . equipped with revolving reel for wind and unwind . . . Perkins semi-steel cast frame for rigidity . . . no vibration. Designed and built for tomorrow's high speeds and pressures.

B. F. PERKINS & SON, Inc.

HOLYOKE, MASS., U.S.A.

LARGEST MANUFACTURERS OF CALENDER ROLLS IN THE WORLD

Over 750 Installations
in 22 Countries
Throughout the World



Morden-ize

THE 3 BASIC TREATMENTS IN YOUR STOCK PREPARATION

EACH STOCK requires one or more of these basic treatments.

EACH MORDEN MACHINE is engineered, standardized and proven in one of these basic treatments.

EACH MILL'S requirements suggest various applications.

OUR EXPERIENCE in assisting mills to develop simple, effective and economical stock preparation systems is available to you upon request.

MORDEN SLUSH MAKER®

...for completely defibering all pulps, papers and brokes (even wet strength) without auxiliary equipment.

MORDEN STUFF MAKER

... for cutting or shortening where required to obtain specific sheet properties.

MORDEN STOCK MAKER®

...for brushing, fibrillating and hydrating individual fibers for maximum strength development.

MORDEN
STOCK PREPARATION EQUIPMENT
MACHINES COMPANY

3420 S.W. MACADAM AVENUE PORTLAND, OREGON

Northeastern States Representatives:
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Midwestern States Representatives:
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Advantages —

1 **EASIER TO BURR**

2 **HOLDS PATTERN LONGER**

3 **MORE UNIFORM GRINDING ACTION**

IN mill after mill the new G Bond Norton Pulpstone is demonstrating these advantages. Many mills have entered repeat orders because they find that this stone gives them the highest quality, cleanest pulp for longest periods. It is another Norton improvement to help you meet today's competitive conditions. Ask your Norton pulpstone engineer about the new G Bond stone in ALUNDUM and 38 ALUNDUM* abrasives.

NORTON COMPANY, WORCESTER 6, MASS.

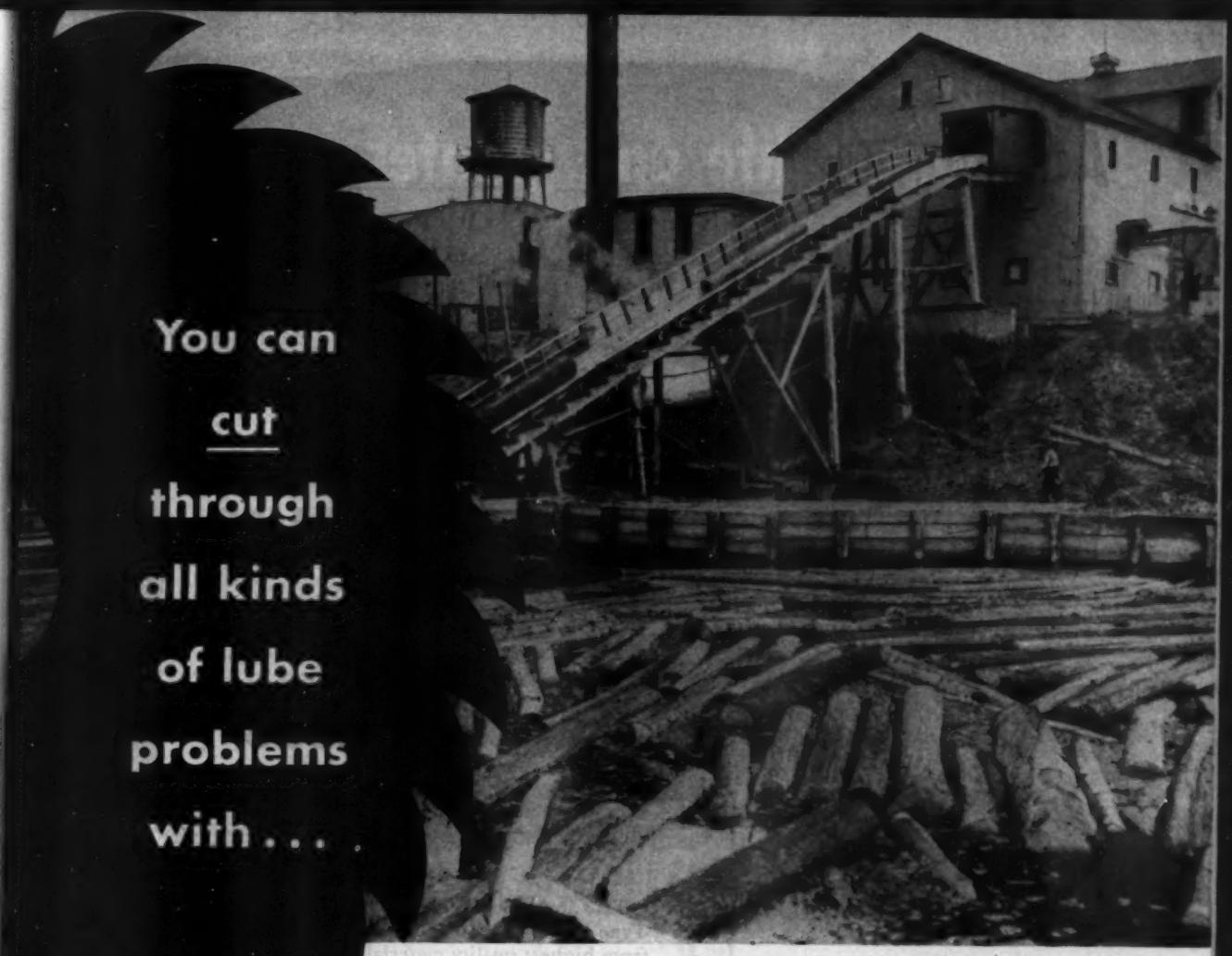
Norton Company of Canada, Ltd.
Hamilton, Ontario

*Shown in illustration above

NORTON
PULPSTONES

Making better products...to make other products better

Abrasives · Grinding Wheels · Grinding and Lapping Machines · Refractories · Porous Mediums · Non-slip Floors · Norbide Products



● This story about a sawmill describes a problem that is common to many industrial plants. And it tells about a service that solves a thousand and one different problems in the operation of industrial machines.

The sawmill pictured above was having trouble with overheated bearings, as well as with high consumption of oil on these particular bearings. In addition, there was excessive dripping of the oil on the floor, creating a safety hazard.

The mill operators asked for the services of the near-at-hand Standard Oil lubrication specialist, C. F. Klenner. He recommended a trial of STANODRIP Oil No. 99, an oil having remarkable dripless qualities and at the same time capable of withstanding high heat.

After a reasonable trial period, inspection revealed that consumption was greatly reduced, bearing temperatures were considerably lower and there were no more oil puddles on the floor. STANODRIP Oil No. 99 was then placed in all line shaft bearings and since then, there have been no bearing failures.

STANODRIP Dripless Oils are part of a complete line of Standard lubricants developed to serve the many machinery lubricating problems of industry. If you want help or information, phone your nearest Standard Oil office or write: Standard Oil (Indiana), 910 S. Michigan Avenue, Chicago 80, Ill.

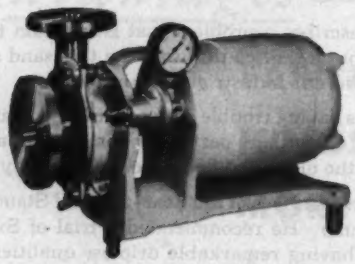
STANODRIP Dripless Oils

STANODRIP Dripless Oils are particularly suited for use in processing industries (food, rubber, etc.) where possible contamination from oil poses a lubricating problem. If your plant is in the Midwest, there's a trained Standard Oil lubrication specialist nearby who can be of service to you.

STANDARD OIL COMPANY STANDARD *(Indiana)*

Add longer life and greater economy

with
TRI-CLOVER
WELDING
FITTINGS



For top quality Centrifugal Pumps . . . be sure to investigate the many advantages offered through the use of Tri-Clover corrosion-resistant industrial pumps for an extremely wide range of applications. For complete details, write for new Catalog 253.

• Tri-Clover Butt Welding Fittings in Stainless Steel Type 304, 347, 316 and other analyses, are custom fabricated from highest quality materials by skilled craftsmen backed by years of specialized experience. Because of this quality, plus full corrosion resistance and longer life, the end result is greater economy in process line service.

Tri-Clover Zephyrweld® lightweight welding fittings are made in tube O.D. sizes from ½″ through 24″ and 36″. Those through 4″ are annealed, pickled and passivated. Larger sizes are annealed, and are passivated on request. Available in all standard fitting types.

Tri-Clover Schedule 5 and 10 welding fittings are made in a full line, for use with light gauge *pipe* in sizes from ½″ through 24″ and 36″.

Schedule 40 welding fittings are available in sizes from ½″ through 12″. Information on request.

For stainless steel welding fittings for every process need, be sure to specify TRI-CLOVER.

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Tri-Clover Division
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1-154

what makes a pretty picture book?

The answer to *that* question is simple. TITANOX titanium dioxide pigments make the stock smooth and sparkling white... pictures are more vivid, even to eager young imaginations. Yes, it's TITANOX that makes a pretty picture book.

TITANOX, the original white titanium dioxide pigments, improve the appearance of quality papers when added to the beater, to the coating, or both. Legibility is improved and show-through is minimized for any given weight of stock by these easily dispersed, always uniform white pigments.

Our Technical Service Department has twenty-five years experience in servicing paper manufacturers in the best use of these pigments. Titanium Pigment Corporation, 111 Broadway, New York 6, N. Y.; Atlanta 2; Boston 6; Chicago 3; Cleveland 15; Los Angeles 22; Philadelphia 3; Pittsburgh 12; Portland 9, Ore.; San Francisco 7. In Canada: Canadian Titanium Pigments Limited, Montreal 2; Toronto 1.

2366

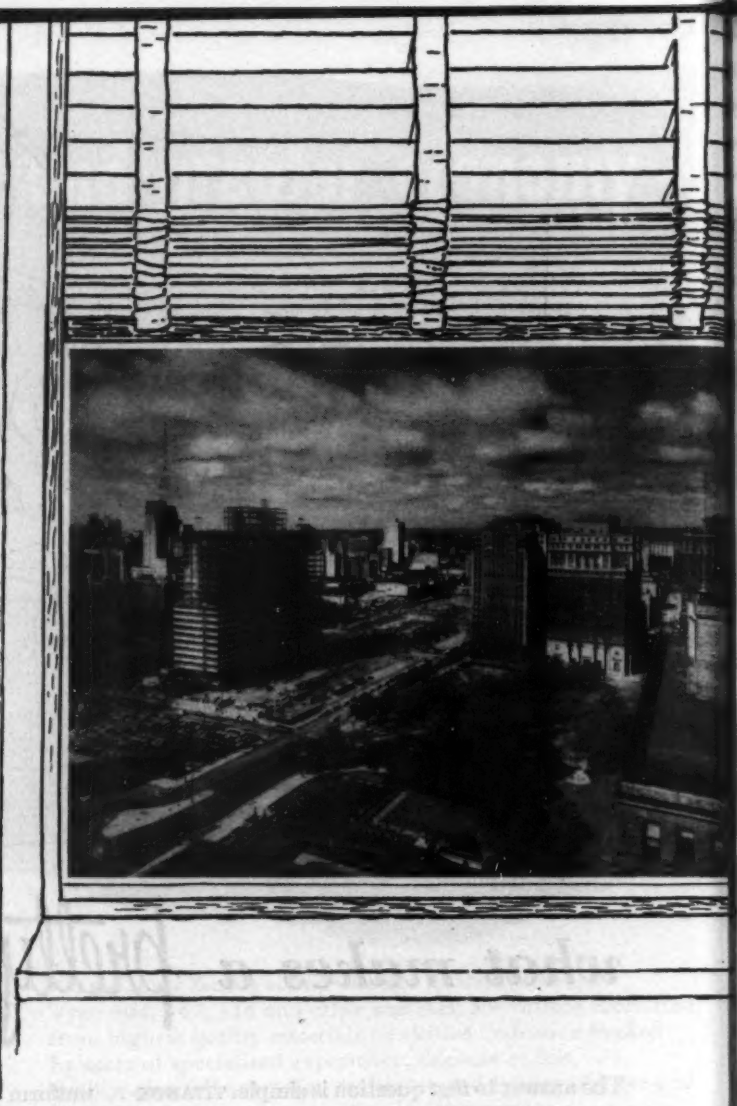
TITANOX

the brightest name in pigments

TITANIUM PIGMENT CORPORATION

Subsidiary of NATIONAL LEAD COMPANY

new horizons



● The new general offices of the Wm. E. Hooper & Sons Company, 17th & 18th floors of the Liberty Trust Building, Broad & Arch Streets, overlook Philadelphia's greatest, modern building development—Penn Center—on the site of the old Broad Street Station and famous Chinese Wall. This amazing growth of one of our nation's oldest cities symbolizes the growth of the Hooper Company, one of the oldest companies in America manufacturing cotton and asbestos dryer felts.

This is the first of a series of views recording the growth of Penn Center

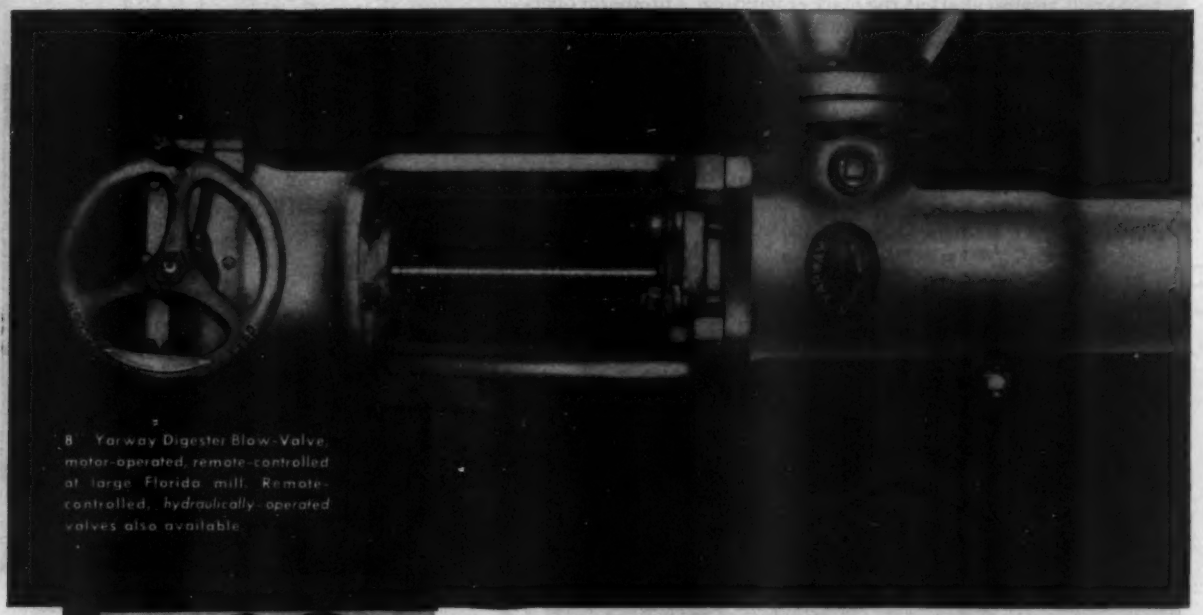
WM. E. HOOPER & SONS CO.

GENERAL SALES OFFICES
Liberty Trust Building
Broad & Arch Sts., Phila. 7
320 Broadway, New York 7
300 W. Adams St., Chicago 6

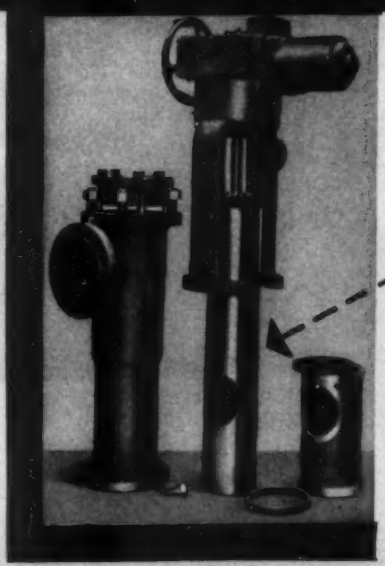
HOOPERWOOD MILLS
Woodberry, Baltimore 11

LONG LIVE YARWAY DIGESTER VALVES

. . . with new 17/4 PH Stainless Steel Plungers



8" Yarway Digester Blow-Valve, motor-operated, remote-controlled at large Florida mill. Remote-controlled, hydraulically-operated valves also available.



8" Yarway Seatless Digester Blow-Valve ready for assembly.

NEW YARWAY SEATLESS DIGESTER BLOW-VALVES are better than ever . . . because a new type plunger solves the problem of wear and corrosion always present in digester service.

This 17/4 PH Stainless Steel Plunger has corrosion-resistant properties approaching those of chrome-nickel steel. In addition it has a hardness of 400 Brinell. Bronze split plunger head bushing also contributes to longer life.

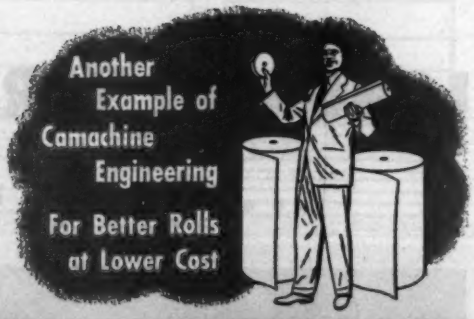
Typical experience has been in a large Florida mill. After 23 months service an 8" Yarway Digester Valve was dismantled for inspection. The 17/4 PH plunger *was in perfect condition—not a scratch on it.* In all that time the packing had not been changed or repacked, and there was *no liquor leakage.* Outage time of digesters has been reduced to a minimum.

Want to know more about these Yarway Seatless Digester Valves? Write . . .

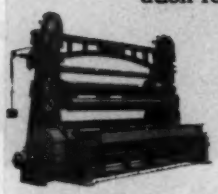
YARNALL-WARING COMPANY
149 Mermaid Avenue, Philadelphia 18, Pa.
BRANCH OFFICES IN PRINCIPAL CITIES

YARWAY®

Hydraulic RIDING ROLL LIFT



Smooth-acting, balanced control with no manual effort. Hydraulic cushioning prevents shock at the maximum upward-travel point of the piston and assures impact-free contact between riding roll and rewind shaft at the start of winding. Automatic operation reduces down-time between sets.



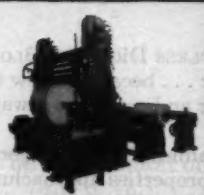
CAMACHINE TYPE 20

Widths to 310". Maximum rewind capacity may be either 42", 60" or 72" dia. Speeds up to 5,000 fpm* on paper and paperboard.

CAMACHINE TYPE 19

Widths to 192". Maximum rewind capacity may be either 42", 60" or 72" dia. Speeds up to 3,500 fpm* on paper and paperboard.

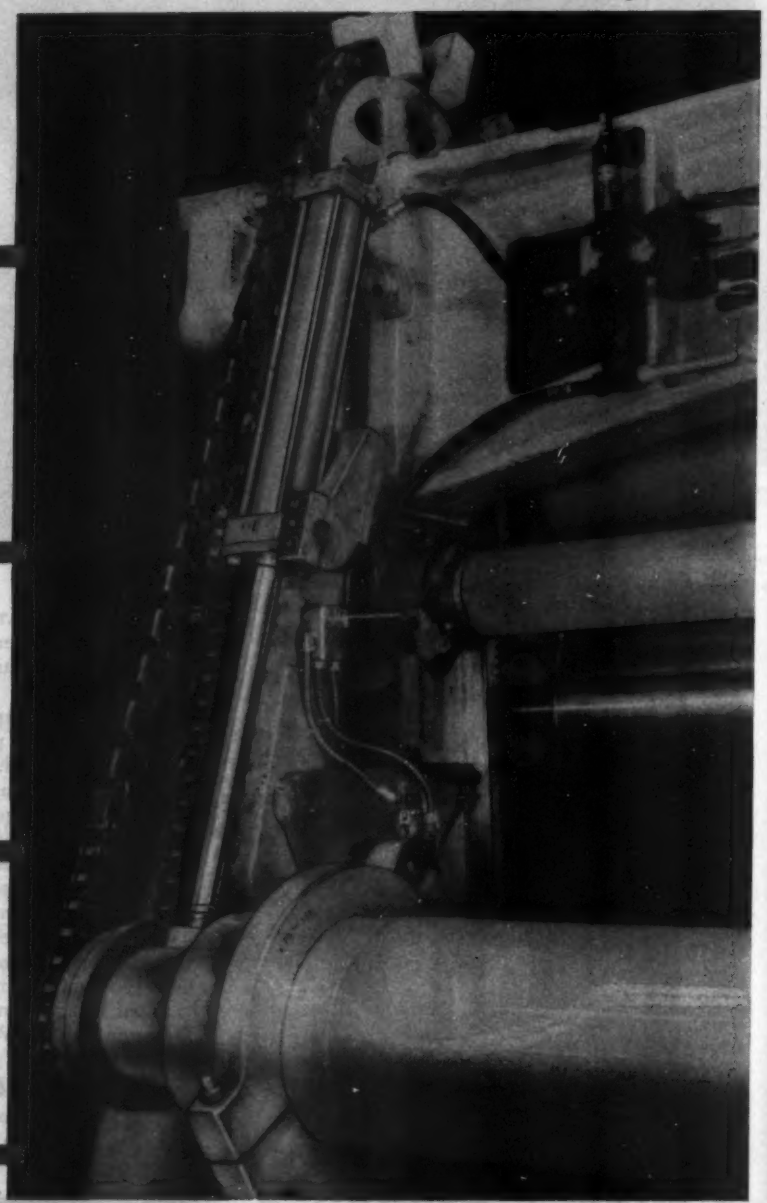
CAMACHINE TYPE 18



Widths to 150". Maximum rewind capacity may be either 42", 60" or 72" dia. Speeds up to 2,500 fpm* on paper and paperboard.

CAMACHINE TYPE 14

Widths to 92". Maximum rewind capacity may be either 38", 50" or 60" dia. Speeds up to 1,800 fpm* on paper and paperboard.

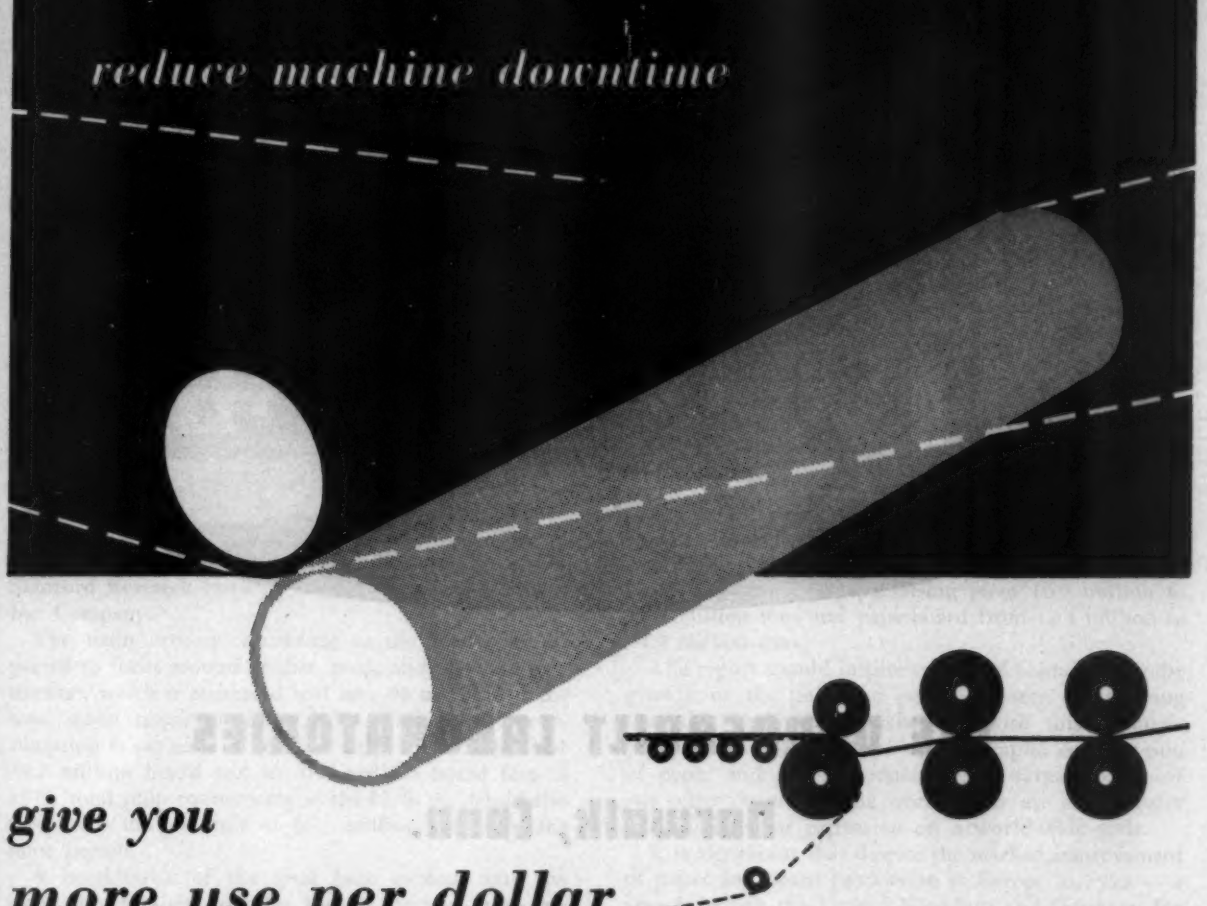


* Speeds depend upon characteristics of material and machine width.

Don't wind up with less than a Camachine®

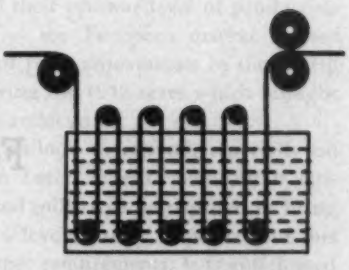
Cameron Machine Company • 61 Poplar Street • Brooklyn 1, N. Y.

reduce machine downtime



give you

more use per dollar



Cracking, hardening, corrugation, or separation of rubber from the metal roll core all spell "trouble" for rubber roll coverings . . . and losses in production, quality and schedules. Manhattan roll specialists have eliminated these causes of expensive machine downtime to give you "More Use per Dollar" with Manhattan Rubber Covered Rolls. They have developed an inseparable bond of rubber to metal. They custom-tailor rubber roll covering to meet your specific requirements. You get permanent uniform and correct density and uninterrupted high speed production runs under all working conditions. Discuss your operating requirements with an R/M roll engineer.

ROLL COVERING PLANTS AT PASSAIC, N. J. — NEENAH, WIS. — NORTH CHARLESTON, S. C.

MANHATTAN RUBBER DIVISION — PASSAIC, NEW JERSEY

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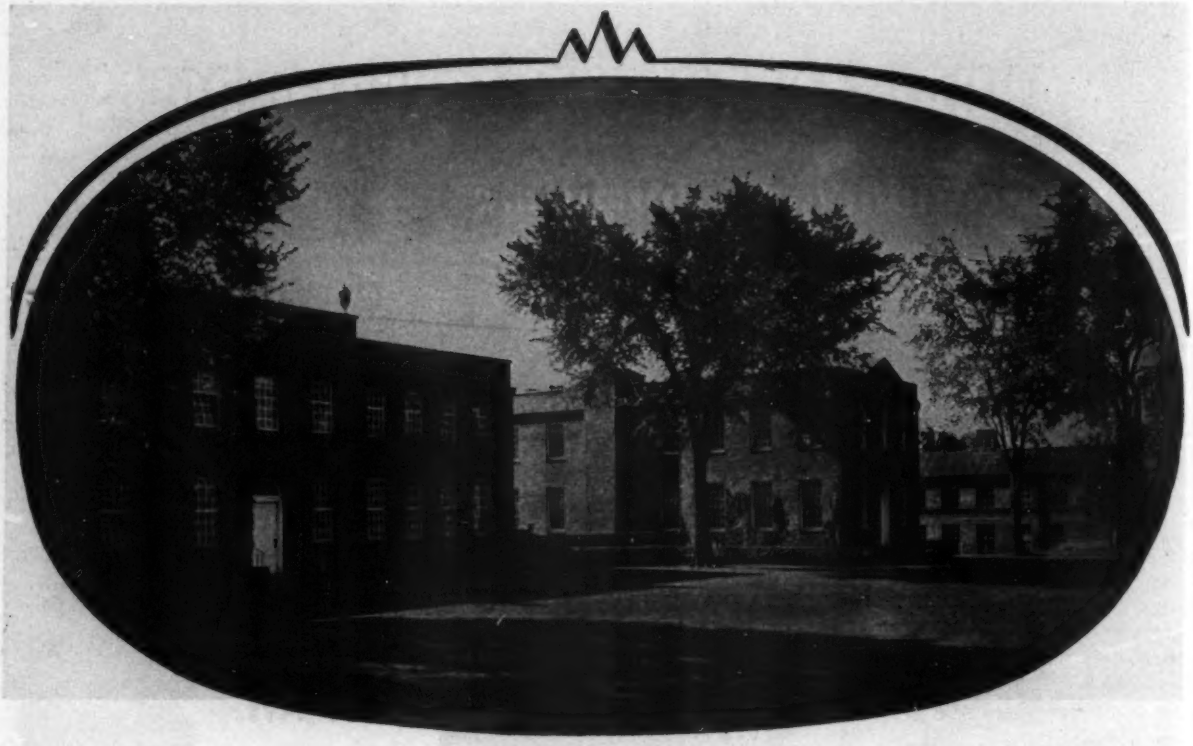
RM 421



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Norwalk, Conn.

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For Testing and Developing
Methods of Improving
Paper Products

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R. T. VANDERBILT CO., INC.

230 Park Avenue, New York City

The Paper Industry

November 1954

What are the prospects for further expansion?

Assurance that the upward trend in pulpwood, pulp, paper, and paperboard production will be sustained over the next twenty years, with costs maintaining their current relative values in relation to other competing materials, is reflected in the exemplary report "America's Demand for Wood" recently completed by the Stanford Research Institute for the Weyerhaeuser Timber Company.

The main activity, according to the report, is expected to focus around lumber, pulp, and plywood production, which is estimated will take 90 per cent of the total wood requirements in 1975. While lumber consumption is expected to increase from the 1952 level of 38.2 million board feet to 41.0 million board feet in 1975, total pulp rquirements in the U. S. A. should rise from 18.0 million tons to 36.1 million tons over the same period.

A break-down of the total pulp tonnage into the main classification provides for an increase from the 1952 level of 6.3 million tons to 10.0 million tons in 1975 for unbleached sulfate pulp; a rise from 6.3 million to 10.7 million tons for white pulps, including bleached and unbleached sulfite, and bleached and semi-bleached sulfate and soda pulps; a rise from 2.6 million to 5.1 million tons for groundwood pulp; and for semi-chemical pulp an increase from 0.8 million to 5.2 million tons.

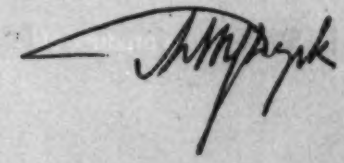
The most important change in the pulp picture is reflected in the increased use of semi-chemical pulp in both paper and paperboard manufacture. Another significant development will be the steady rise of bleached and semi-bleached sulfate pulp in the white pulp classification, as made possible by the extraordinary end-use versatility of sulfate pulps. No major expansions in capacity are anticipated in sulfite and soda pulps production.

Total paper and paperboard consumption is estimated to increase from 29 million tons in 1952 to 52.9 million tons in 1975, with paper rising from 16.9 million to 28.0 million tons and paperboard from 12.1 million to 24.9 million tons.

The report should inspire continued confidence in the growth of the pulp and paper industry. Considering that this study deals exclusively with this country's wood requirements, where the per capita consumption of paper and paper products by far surpasses that of any other country in the world, there are even greater potentialities for expansion on a world-wide scale.

It is significant that despite the marked improvement of paper and board production in Europe in 1953 — a year in which the United Kingdom and Germany for the first time exceeded their pre-war level of production of paper and board — the European market reacted quite calmly to upward price adjustments in the fourth quarter of 1953 following the 1952 scare which brought a series of drastic price reductions.

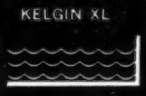
The industry will continue to expand, especially on a world-wide basis. In Latin America alone, it is estimated that 50 additional mills will be required to bring paper consumption to a level of only 10 per cent of this country's per capita paper requirements. It is anticipated that these 50 mills will be put in operation in Latin America in the next ten years.



REDUCE CALENDER WRAPPING

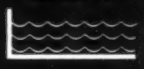
keep 'em rolling with

KELGIN XL



WATER BOX

KELGIN XL



WATER BOX

non-tacky surface size

Because Kelgin XL size is non-tacky, it virtually eliminates calender wrapping. This hydrophilic colloid has excellent filming properties, produces improved smoothness, more uniform printing surface, and increased oil and varnish resistance without adverse effect on other paper qualities.

It is ordinarily applied from calender water boxes as a 1% to 3.5% solution with concentration used depending upon type and degree of finish desired.

. . . a product of company

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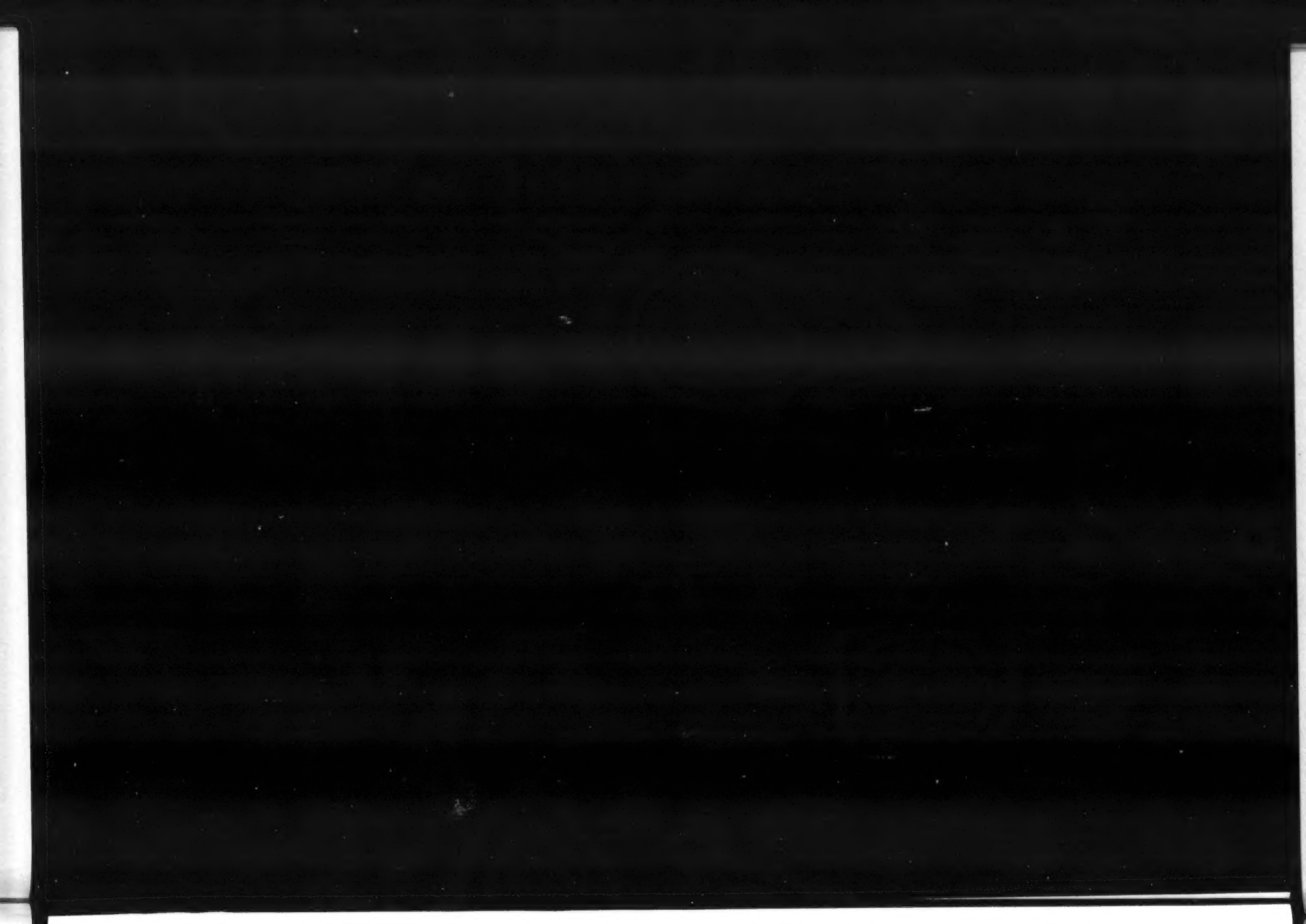

CURRENT COMMENTS

Concentration in paper . . . poetry in statistics . . . and a new record

A series of mergers in the paper and paperboard field will be given a comprehensive study by the Judiciary Committee of the House of Representatives. That group has asked the Department of Commerce to make an early preliminary report on its investigations of concentration in the paper industry, as well as in the steel, chemical and capital goods industries. The committee wants this report early in the 1955 session of Congress in connection with its study of the attorney general's committee on the over-haul of the anti-trust laws. A detailed survey has been made by the Commerce Department, but no aspects of its findings have been released, and in fact no recommendations are believed to have been formulated as yet.

Those sections of the industry that are facing the problem of import competition are finding Washington full of various activities in connection with proposed changes in tariff rates. A special series of hearings on the basic principles underlying the international conference on tariffs—known as "GATT" (General Agreement on Tariffs and Trade)—was completed some weeks ago. These hearings were in preparation for the opening sessions of GATT at Geneva in November. The Tariff Commission is hurrying a special report, preliminary in form, on the simplification of tariff classifications of dutiable merchandise. And industries have been invited to present their views.

Correction if ineffective

Under the provisions of GATT, all changes in tariff rates effected through that organization since 1947 are automatically subject to study with a view to correction if found ineffective or unduly injurious to industry. Industry was given until October 18 to file briefs, and on that date the Committee for Reciprocity Information at Washington scheduled oral appearances for industries desiring to be heard.

It was to be presumed that the paper industry, as is its custom in all tariff matters, was to be represented.

Titled poet and his survey

Roy Neubrecht, deputy assistant director for pulp, paper and paperboard in the Forest Products Division of the Business and Defense Services Administration of the United States Department of Commerce, has become poetical, despite his long title, in his current survey of the paper industry.

He admits finding it difficult to get an industry picture in the summer vacation months, so devotes much of his quarterly review dated September to a discussion of new uses for paper. In his words, "Vacation time is paper time."

Apparently Mr. Neubrecht visited ocean beaches or similar resorts, for he says that he found on the seaside paper sandals and in motels paper towels, bath and shower mats. He discovered a "hot coffee ensemble" for that early morning eye-opener. The single sanitary unit boasted powdered coffee and powdered cream and sugar. He slipped here, however, for he mentioned cellophane as a competitor of glassine paper as a wrapping for this combination. His survey includes references to uses of paper at picnics, garages, and then deigns to report that paper and paperboard production continues at a strong level.

No change in trend

There is no change in the industry trend toward continued high production of paper and paperboard. Production is sufficiently high to indicate a possible new output record for the year if the fall months continue present trends in demand. A survey of profits shows a material increase in dollar volume of sales over the first half of 1953.

Profits on operation have presumably decreased as a result of higher material costs and labor factors, but this may prove to have been more than neutralized by the change in the tax laws.

Financial Reports

Securities markets—after reaching record highs—appear now to be chiefly interested in selective securities. Some of this is seen in paper mill issues, some of which were up nicely from September while others were sagging.

Net incomes

International Paper Co.—Net income for the six months ended June 30 was $30,422,315, as compared with $28,586,188 for the comparable 1953 period.

Kalamazoo Vegetable Parchment Co.—Net income for the nine months ended June 30 was $1,695,243, as compared with $1,448,547 for the comparable months a year ago.

Keyes Fibre Co.—Net half-year income was $662,594, as compared with $518,570 a year ago.

Kimberly-Clark Corp.—Net income for the quarter ended July 31 was $1.37 per share, as compared with $1.08 for the same quarter a year ago.

Marathon Corp.—Net income for the nine months ended June 30 was $1.43 per share, as compared to $1.14 for the comparable period last year.

Mead Corp.—Net income for the 24 weeks ended June 13 was $2,473,349, as against $2,586,665 for the comparable 1953 period.

Minnesota & Ontario Paper Co.—Net income for the first half of 1954 was $2,678,401, as compared to $2,706,110 a year ago.

National Container Corp.—Net income for the first half of 1954 was $1,451,589, compared with $2,098,282 in the first half of 1953.

National Vulcanized Fibre Co.—Net six-month income was $159,305, as against $466,684 a year ago.

Oswego Falls Corp.—Net income for the first half of 1954 was $1,006,004, as compared with $755,580 for the same months of 1953.

Oxford Paper Co.—Net income for the first half of 1954 was $1,749,653, as compared with $1,308,693 a year ago.

Puget Sound Pulp & Timber Co.—Net income for six months ended June 30 was $1,800,479, as compared with $1,448,243 a year ago.

Rayonier Inc.—Net income for the six months ended June 30 was $5,940,369, as compared with $5,333,022 a year ago.

St. Croix Paper Co.—Net income for the six months ended June 30 was $668,340, as compared with $508,102 for the first half of 1953.

Current comments . . .

St. Regis Paper Co.—Net half-year income was $7,957,391, as compared with $7,122,208 a year ago.

Scott Paper Co.—Net income for the first half of 1954 was $7,190,406, as compared with $5,622,619 a year ago.

Sutherland Paper Co.—Net income for the six months ended June 30 was $2,110,987, as compared with $1,500,147 a year ago.

Union Bag & Paper Corp.—Net income for the first half of 1954 was $5,479,365, as compared with $5,150,447 for the same period in 1953.

United Board & Carton Corp.—Net income for the year ended May 31 was $518,040, as compared with $629,103 for the previous fiscal year.

United States Envelope Co.—Net income for the first half of the year was $667,990, as compared with $517,859 a year ago.

United Wall Paper Inc.—For the year ended June 30 the net deficit was $371,291, as compared with a deficit of $488,689 for the preceding fiscal year.

Warren Co., S. D.—Net income for the six months ended June 30 was $1,171,000, as compared to $1,150,000 for the preceding year.

West Virginia Pulp & Paper Co.—Net income for the nine months ended July 31 was $9,138,000, compared to $9,812,000 a year ago.

Dividend declarations

Charmin Paper Mills Inc. has declared dividends of 37½ cents a share on the common and 34⅜ cents a share on the preferred, both payable October 1 to stockholders of September 11.

Fox Paper Co. has declared a quarterly dividend of 50 cents a share on the common, payable September 14 to holders of record September 11.

P. H. Glatfelter Co. has declared dividends of 25 cents a share on the common and 56¼ cents on the 4½ per cent cumulative preferred, both payable November 1 to holders of record October 15.

Kalamazoo Vegetable Parchment Co. has authorized a special 15-cent dividend in addition to the regular 25-cent per share payment, both payable December 10.

Nekoosa-Edwards Paper Co. has declared a dividend of 20 cents per share on the outstanding stock, payable November 10 to record holders of October 29.

Paper mill corporate changes

Brown Co.'s recent sale of its Quebec woodlands, pulp mill and power assets for approximately $45,000,000 may enable the firm to retire all its funded debt and preferred stocks. The buyers were Canadian International Paper Co. and Shawinigan Water & Power Co.

Consolidated Paper Co. has reported that its secondary offering of 5000 shares of common stock through First of Michigan Corp. has been substantially oversubscribed. Offering price was $28 per share.

E. B. Eddy Co., it is reported, is planning to offer an issue of $10,000,000 in first mortgage bonds. Proceeds are expected to apply to the refunding of outstanding series "A," "B," and "C" bonds and for general corporate purposes. The firm is a wholly owned subsidiary of Eddy Paper Co. Ltd.

Great Lakes Paper Co. has appointed Royal Trust Co. as transfer and dividend disbursing agent at its offices in Toronto and Montreal, and Canada Trust Co. as registrar.

Hinde & Dauch Paper Co. of Canada is offering its stockholders rights to buy 60,000 shares of common stock on the basis of one new share of stock for each five held of record September 15. The parent company will buy any unsubscribed shares.

Hudson Pulp & Paper Corp.'s offer of 20,000 shares of $1.41 cumulative second preferred stock was immediately oversubscribed by a group headed by Lee Higginson Corp.

Mead Corp. has filed with the SEC a registration statement covering a proposed offering of 150,000 shares of cumulative second preferred stock at $50 par value. Proceeds will be added to general corporate funds.

St. Helens Pulp & Paper Co. has given Crown Zellerbach Corp. a mortgage on its properties as part of the program under which St. Helens became a subsidiary.

St. Regis Paper Co. has completed arrangements for the sale to a group of nine insurance firms of $73,000,000 in 3⅝ per cent debentures. Of these funds, $52,590,000 will be applied to the redemption of outstanding obligations to the same insurance companies. The balance will be used for increased working capital and expansion in the West and South.

Westminster Paper Co. Ltd. of New Westminster, B. C., has sold a half interest in its property to Scott Paper Co.

Stock and Bond Quotations

New York Stock Exchange — Stocks Closing Prices	Oct. 11, 1954	Sept. 10, 1954
A.P.W.	4¼	3
Celotex	22	22½
Same Preferred	18½	17⅝
Certain-Teed Prod.	18⅞	19⅞
Champion P. & F	*48-49	46⅝
Same Preferred	105¾	107½
Chesapeake Corp.	36⅝	38¼
Container Corp.	61¾	59
Same Preferred	108	...
Continental Diamond	12	12½
Crown Zellerbach	55½	53
Same Preferred	*104⅝-105¼	104
Dixie Cup	54¼	57½
Eastern Corp.	21⅝	22⅝
Robert Gair	24½	25⅜
Gaylord Container	32⅞	30½
Great Northern	66½	66⅝
Hammermill	18⅜	20⅜
International	78⅜	74⅝
Same Preferred	*105-106½	105½
Kimberly-Clark	36⅜	35¾
Same Preferred	*143½-147½	142
MacAndrews & Forbes	*46⅝-47	44
Marathon	26⅞	26¾
Masonite	20⅝	21
Mead Corp.	88¼	38
Same Preferred	98½	98½
National Container	12⅝	12¾
Same Preferred	23⅞	24
Rayonier Inc.	46¾	48¾
Same Preferred	39	38
Scott Paper (New)	52½	95¼
Same $3.40 Pref	94½-96	95¾
Same $4.00 Pref	104½-106	104
St. Regis Paper	34¼	30⅞
Same Preferred	*103-103¼	102
Sutherland Paper	43	43¾
Same Preferred	*147-155	149½
Union Bag & Paper	62¾	61¾
United B & C	17½	17
United Wall Paper	2	2⅛
Same Preferred	*15½-17	17¼
U. S. Gypsum	187	176
Same Preferred	*181¼-188	181
West V. P & P.	32¾	33¼
Same Preferred	108¾	106¼
New York Stock Exchange — Bonds		
Celotex 3¾%	...	...
Champion P&P Co. 3%	...	...
Mead Corp.	...	...
American Stock Exchange — Stocks		
American Writing	16¼	16
Brown Company Common	16¼	16⅞
Same $5 Preferred	57⅜	118½
Same $3 Preferred	118½	53
Puget Sound	40	40

*Closing Bid and Asked Prices

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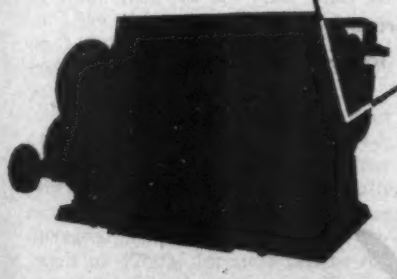
TAKE A LOOK at the nameplate on *your* Bird Screens. If the Serial Number does not have the letter "B" or is from 1-B to 250-B, the Screen is over a quarter century old and of ferrous construction. *It ought to be replaced right now!*

Even if yours isn't that old (hundreds of these ancient Screens are still on the job) it should be looked at in the light of the latest Bird screening methods and equipment, and your present capacity and quality needs.

Modern Bird Screens have the capacity to provide efficient screening action with fine cut screen plates. They provide the final barrier to both product and process dirt.



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FLOKOTE an exceptionally stable oxidized starch. Light in color. Opaque. Good flow characteristics that help to obliterate brush marks. High water retention that makes coatings more uniform. Excellent stabilizing properties for thermoplastic resins. In all, just the right combination of desirable properties for coating!

FLOKOTE is only one of National's many high-speed coating starches for top quality printing papers or similar stocks. Knife or brush coated. Tell us your requirements. We have a completely staffed laboratory devoted exclusively to paper research. And a technical mill service to help you adapt any starch or dextrin to your plant operation.

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NEWS of the INDUSTRY

DURING AND AFTER. Rampaging fire on Wolf Creek in Oregon (left) burned 100 acres in the Ochoco National Forest in 1951. The view of the Tillamook Burn at the right shows the ravages of one of the most devastating fires in Oregon history

National Forest Blazes Down From 1953; Acreage Burned Cut 46%

FIRES ON NATIONAL forests during the first eight months of this year are down drastically from the same period of 1953.

According to the United States Forest Service, the latest complete figures (end of September) show a reduction of more than 46 per cent. Thus far in 1954 there have been 8967 fires on 117,015 acres of timber. The first eight months of 1953 saw 218,003 acres burned in 9640 blazes.

The Forest Service attributes most of the decrease to the unusually wet summer in sections of the country where lightning fires are usually numerous. Although man-caused fires increased somewhat (4528 as compared to 3760), foresters believe the record was good considering the increased woods use.

As of the middle of October, the USFS was warning that the fire danger for 1954 is far from over. California and the South had extreme drought conditions. And in the East and Midwest the danger is always high when hardwood leaves begin falling.

In a detailed report to THE PAPER INDUSTRY, the USFS discusses the fire experience in each of the nine forest regions:

Northern Region

As of the end of September the Northern region (Montana, northern Idaho and eastern Washington) reported 716 fires as compared to 1615 for the same period in 1953. Of these, 135 were man-caused, contrasted to 249 a year ago. The 1954 area burned was 1107 acres, while that in 1953 was 9562 acres (down a whopping 89 per cent). Generally speaking, the season has been cold and wet. Snows have already fallen, and foresters see little likelihood of a bad fall season.

Rocky Mountain Region

The Rocky Mountain Region (Colorado, eastern Wyoming, Kansas, Nebraska and South Dakota) reported more fires this year—590 as compared to 391, but with a startling decrease in acreage—3026 as compared to 11,997. There were 164 man-caused blazes in 1954, while 131 were so attributed last year. The USFS sees a steadily diminishing fire threat.

Southwestern Region

The Southwestern Region (Arizona and New Mexico) had had 1910 fires by the end of September this year, while at the same time in 1953 it had reported 1679. Man-caused fires dropped from 213 in 1953 to 172 this year. The acreage burned also dropped—from 48,736 to 11,608. While the number of fires shows that conditions were dry, the acreage burned shows that timberlands had not reached the tinder-dry stage. Thus, fires could be stopped more quickly.

Intermountain Region

The Intermountain Region (Utah, Nevada, western Wyoming and southern Idaho) reported 595 fires for the first eight months of 1954 as compared to 804 a year ago. Man-caused fires dropped from 189 in 1953 to 175 this year. Acreage burned was also less: 3069 to 7384. The region is somewhat concerned about the fall use of the woods, which seem to be "drying out."

California Region

At the end of September, California had reported fewer fires than a year ago—856 as compared to 1769. Man-caused fires rose slightly—562 this year and 556 last. The area burned dropped from last year's 100,126 acres to only 34,387 this year. September and October were "bad months" in the region with many large fires. Foresters warn that the danger is still running high.

Pacific Northwest Region

The Pacific Northwest Region (Washington and Oregon) reported 592 fires this year, compared to 959 last. Man-caused fires were down from 181 in 1953 to 156 this year. The area burned: 504 acres in 1954 and 977 acres in 1953.

Northeastern Region

The regions east of the Mississippi had an exceptionally dry early spring and got off to a bad fire season.

In the Northeastern Region (the 14 states extending from Maine to

CONSTRUCTION WORK is proceeding on schedule at the new bleaching and pulping building going up for Hammermill Paper Co. at Erie, Pa. The structure will house equipment for the production of Neutracel pulp from hardwood fibers. At the left is a view showing progress on the steel framework. At the right H. W. Vance, project manager for Rust Engineering Co.; K. C. Neuenfeldt, Hammermill project manager, and R. W. Newby, Rust construction superintendent, check plans at the construction site

Kentucky), there were 240 fires in the first eight months of 1954, up appreciably from the 159 blazes during the same 1953 period. This year there were 208 man-caused fires, as compared to 142 last year. The acreage burned increased from 1520 in 1953 to 3607 this year.

Southern Region

The Southern Region (11 states extending from Virginia to the Gulf and from the Atlantic Seaboard to the Texas-New Mexico border) not only experienced a bad spring, it is also suffering from a late season drought. Its report at the end of September showed 2353 fires, as compared to last year's 1201. Some 1879 of these were man-caused this year, while the number in the first eight months of 1953 was 1053. Acreage burned in 1954 was 46,386; last year, 22,656.

North Central Region

The North Central Region (North Dakota, Minnesota, Iowa, Missouri, Wisconsin, Illinois, Indiana, Ohio and Michigan) reported through September 30 a total of 1089 fires, burning 13,264 acres, of which 1051 were man-caused. Last year the record for the same period was 1021 fires on 15,035 acres, of which 1004 were man-caused.

•

Brown Corp. Agrees to Sell Woodland Area and Mill

Brown Corp. has agreed to sell its Quebec woodland holdings and bleached sulfate pulp mill to Canadian International Paper Co. At the same time, it was announced that the firm's hydro-electric power interests are to be sold to Shawinigan Water & Power Co. More than $40,000,000 is involved in the sale.

Laurence F. Whittemore, board chairman and president of Brown, said that the agreement is subject to the approval of shareholders at a November 19 meeting in Portland, Maine.

The properties to be sold to Canadian International include approximately 2,500,000 acres of woodlands (consisting of Crown lands under lease and freehold properties) and the pulp mill located at La Tuque, Que. The mill has an annual capacity of 165,000 tons of high-grade bleached kraft pulp.

Brown Corp. presently employs about 3000 people at the La Tuque mill and in its woodland operations. Vernon E. Johnson, president of Canadian International, declares that his firm plans to continue all mill and woodland operations on the present basis. The bleached sulfate pulp production of the mill, he said, will be sold by Canadian International's subsidiary, Riordon Sales Corp. Ltd., primarily in Canada and the United States.

Plans call for the integration of all woodland and production activities of the Brown properties with present CI operations. The latter firm has two newsprint and three dissolving pulp mills in Quebec and Ontario. A subsidiary, New Brunswick International Paper Co., operates a third newsprint mill at Dalhousie, N. B.

J. A. Fuller, president of Shawinigan Water & Power, declared that his company is purchasing Brown's half-interest in the capital stock of St. Maurice Power Corp., which in turn owns the big hydro-electric generating station at La Tuque.

$25 Million Brown Project

It has been reported in Berlin, N. H., that Brown may spend from $15,000,000 to $25,000,000 in the construction of a new mill and the modernization of its other properties.

The firm will have about $42,000,000 by the end of the year from the sale of its Canadian properties.

Brown officials in Berlin refused to discussed expansion plans. President Laurence F. Whittemore declared "We can't discuss what we'll do with this cash until we have it in our hands."

On receipt of the cash, Brown may either retire stock and bond issues or go after a larger share of the nation's pulp and paper business by the construction of another mill. One group of directors favors the latter course.

•

Strathmore Buys Warehouse For Storage

A big step toward reducing the problem of rising freight costs has been taken by Strathmore Paper Co. of West Springfield, Mass. The firm has purchased the W. Warren Thread Works Inc. building in Westfield and will use it as a central warehouse and shipping point.

The textile building contains approximately 75,000 sq. ft. of floor space that will be eventually utilized entirely for inventory storage.

SPREADING resin on plank preparatory to laying paper overlay in place

PLACING a stack of overlaid planks in a press for curing bonding glue

FITTING PAPER overlays to planks of knotty lumber to be tested for seating

Paper Contributes to the Comfort of Football Fans at U. of Wisconsin

OF THE 50,000 FOOTBALL fans who watch the University of Wisconsin gridiron team in action each week at Camp Randall Stadium in Madison, about 300 are contributing to scientific knowledge about wood-paper composites.

Their contribution consists of sitting on a new kind of stadium seating developed at the U. S. Forest Products Laboratory in Madison. The seating is made of 2-in. knotty lumber overlaid with several types of resin-treated paper and paper plastics. The resin makes the paper highly resistant to rain. A similar resin bonds the paper to the wood.

Lumber planking has long been the preferred stadium seating material because it is durable, strong and warm to the touch. At Camp Randall, however, some of the planks have served many years, and replacements are needed. Top-grade planking costs the university about $1.50 per customer.

Athletic Director Guy Sundt asked Dr. J. A. Hall, director of the forest products lab, about possible alternatives. Dr. Hall suggested a trial of paper-overlaid planking. The advantage of the overlaid planking, according to the laboratory, is that it can be made of comparatively cheap, narrow, knotty lumber by gluing pieces together in order to get the desired seat width. The smooth treated paper gives an unblemished surface that can take a lot of scuffing.

Possible as house siding

This is the first time that the laboratory researchers have tried to glue paper overlays to 2-in.-thick planking. It has worked well, however, in tests with 1-in. boards, and the lab is giving it surface tests for such uses as house siding.

The experiment to test paper-overlaid planking in comparison with regular plank seating was planned by Bruce G. Heebink and Robert J. Seidl, laboratory engineers. As possible variants, they also installed some planks overlaid with a commercial hardboard sheet material and with a paper plastic furnished by Consolidated Water Power & Paper Co. of Wisconsin Rapids. The paper company also furnished several planks with a plastic overlay molded to the wood.

Also for comparison purposes, several planks of prime-quality, straight-grained knot-free wood were installed, some of which were treated with a water-repellent chemical. Into all bolt holes a non-staining wood preservative was squirted to protect from decay.

Although the laboratory does not manufacture its products for sale, it makes the results of its research available to industry. It is expected that if the overlaid planks stand up for a few years, similar products will probably be put on the market by private firms.

INSTALLING a paper-overlaid plank in Camp Randall Stadium

Outlook for 1960: U.S. Consumption 100 Million Tons

National consumption of paper in 1980 will be four times greater than at present, according to Frank C. Ash, president of Oswego Falls Corp. of Fulton, N. Y. Addressing the Kansas City (Kans.) Chamber of Commerce's fall meeting, he predicted that in a quarter of a century consumption each year will total about 100,000,000 tons.

Mr. Ash declared that a one-ton truckload of paper is required to supply the present needs of an American family of five. He said that the nation's per capita consumption of paper is now 28 times that of Russia and half again as much as Canada's.

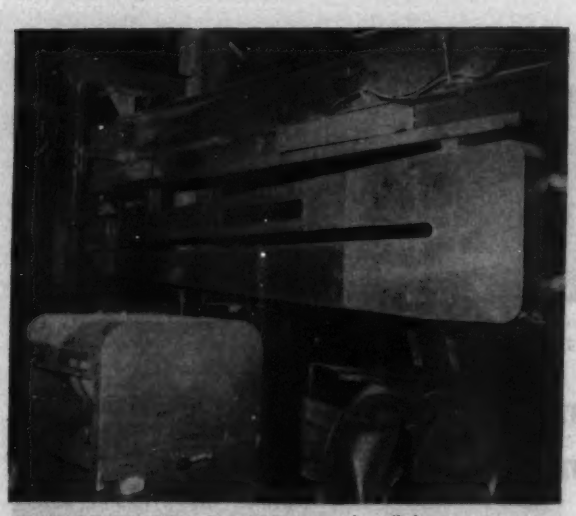
By 1980, the speaker continued, the American family of five will require a 2½-ton truckload of paper. He attributed the predicted increase to both the rapid development of new uses for paper and the rise in population.

"Because paper is still one of the cheapest materials in the world for making useful objects," Mr. Ash explained, "the paper industry may well be America's fastest growing industry 30 years from now."

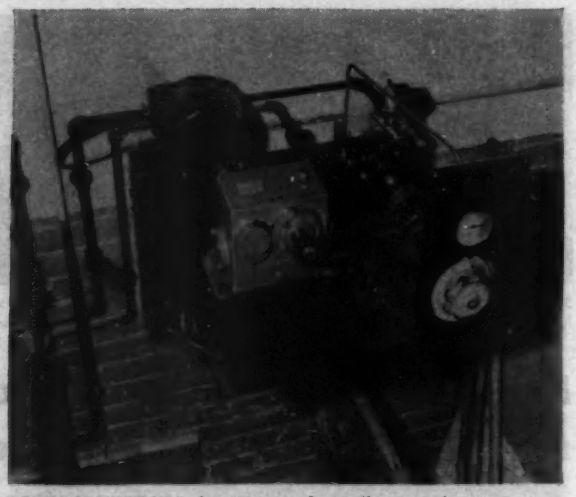
Suburban growth

"The movement of retail stores to suburban areas and the development of shopping centers and supermarkets, where self service is a big money-saver in labor costs, have greatly contributed to the growing use of paper," the speaker continued. "Sanitary paper packaging fits this picture perfectly, particularly in the food departments, where the housewife can buy a package of milk as quickly as a package of breakfast food or even whole semi-prepared dinners.

Although New York is still the largest paper-producing state in the country," Mr. Ash concluded, "we are watching the phenomenal growth of the industry in the South, where the rapidly growing forests make available a wonderful source of the industry's main raw material."



MEASURING UNIT at S. D. Warren in the off-sheet position



CONTROL MOTORS that actuate the stuff gate valve

S. D. Warren Uses Electronic Control System to "Trigger" Pulp Feed

AUTOMATIC CONTROL is being applied to the art of papermaking at S. D. Warren Co. in Cumberland Mills, Maine. Officials have revealed that the firm is using a nuclear gauge to "trigger" an electronic control system that automatically regulates the amount of liquid pulp introduced into the paper machine.

With the system, hand sampling and adjusting are a thing of the past at the Maine mill. The gauge, which uses a radioisotope to provide non-contacting continuous measurement, scans back and forth across the sheet constantly, reading the exact weight of the paper and averaging it.

When the average weight varies from specified tolerances, the gauge signals the electronic controller, which in turn raises or lowers the stuff gate in accordance with the signal.

The control equipment was designed and manufactured by Industrial Nucleonics Corp. of Columbus, Ohio, and consists of (1) an AccuRay radiation gauge that acts as the sensing element for the control system; (2) a scanning mechanism that enables the gauge to measure across the width of the sheet; (3) a scanning integrator that averages the weight of the sheet, and (4) a proportional automatic controller with safeties.

Industrial Nucleonics engineers determined that although the basis weight of paper has inherent machine direction stability for short periods of time, there are sizeable weight variations across sheet — plus long-term machine direction drifts.

In order to detect these variations, an AccuRay gauge was installed after the last dryer roll and before the wind-up to measure the finished paper at its final weight. The gauge measures slowly across the width of the sheet, presenting its reading of the sheet profile on a recorder. When the gauge reaches the end of its scan, the recorder pen clamps while the gauge retracts quickly to begin a new scan.

During the quick retraction, a scanning integrator averages the weight of the sheet and flashes its signal to the controller. If the average is beyond the control band set into the controller, appropriate control action is initiated to adjust the flow of "stuff" onto the wire.

Control is proportional — the larger the error, the longer the correction time. The system operates continuously, but control action takes place only when necessary.

Safety devices are incorporated in the system to insure product and process protection. If equipment failures are encountered or if unusual process conditions prevent the controller from making its proper corrections, automatic control terminates, and an alarm sounds to inform the operator of the situation.

INSTALLATION CLOSE-UPS show (left) a front view of the gauge measuring across the sheet, and (right) the operator's control station for the auto control system. The latter consists of a recording console and a simply-designed control box (directly above the operator's right hand). Box panel features a transfer switch that enables the operator to point to Auto Control, Manual Control and Standby. Lights indicate whether the control action is opening or closing the stuff gates

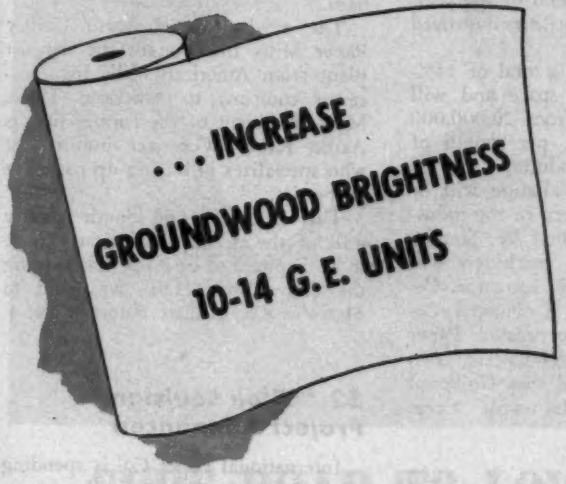
•

Cooper Buys St. Regis Watertown Mill

St. Regis Paper Co. has announced that arrangements have been completed for the sale of its Watertown, N. Y. mill to Aco Machinery Co., of which Abe Cooper is owner. Mr.

Bleach your pulp for brighter paper

with DU PONT PEROXIDE BLEACHING PROCESSES . . .



No other process gives you such high stable brightness levels—*increases of 10-14 G.E. units where needed!* Yet, Du Pont's Peroxide Bleaching Process preserves all the desirable features of groundwood, including high opacity, good formation and excellent printing properties.

SEND FOR OUR NEW BULLETIN P62-1054, "High-Brightness Bleaching of Groundwood." It describes how you can increase your groundwood brightness for brighter, more profitable papers. Mail coupon below for your copy of this bulletin and descriptive booklet.

Meet today's demand for high-quality bleached pulp with the Du Pont Peroxide Process. You can bleach sulfate pulp to high, *stable* brightness values, retaining good strength characteristics.

Peroxide treatment improves brightness retention and color stability of bleached pulp. In most cases the Du Pont process can be operated in existing equipment, with only a small investment for storing chemicals.

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DU PONT PEROXIDES are available for prompt delivery from conveniently located manufacturing plants. Du Pont's modern plants and facilities assure you a dependable supply of top-quality peroxide for your bleaching needs.

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- ☐ Booklet, "Peroxide Bleaching of Sulfate Pulp"

*Name*_____

*Firm*_____ *Position*_____

*Address*_____

*City*_____ *State*_____

Cooper is the former president of Bagley & Sewall Co., which was recently sold to the Black-Clawson Co. The new owner has indicated that he will make the mill his headquarters and continue its operation.

The mill's equipment consists of two cylinder paper machines—one 70-in. and one 84-in.—with a maximum trimmed sheet of 74 in., and one 57½-in. coating machine. The plant produces No. 1 rope, jute, kraft, and composition cylinder papers and has a daily capacity of 25 tons.

•

New York & Pennsylvania Contracts for Fourdrinier

New York & Pennsylvania Co. has recently contracted with Downingtown Mfg. Co. for a new 116-in. fourdrinier for its No. 5 machine at Lock Haven, Pa. Offset sheets of from 50 to 90 lb. and book of from 35 to 80 lb. are to be produced, but the possibility of manufacturing other grades has also been considered in the design of the unit.

The fourdrinier will be of a standard type and will have 27 rubber-covered aluminum tube table rolls. Speeds of 500 fpm will be possible.

In addition to the new fourdrinier section, revisions will be made in the press section — including the installation of new rolls, top arms, housings and bearings. Operation of the equipment is expected by spring of 1955.

•

Western Containers Rebuilding

The $700,000 reconstruction program of Western Containers Inc. in Lockport, N. Y., is expected to be completed before the end of the year. The project replaces facilities destroyed in a fire June 4.

The firm will have a total of 145,000 sq. ft. of floor space and will boast a capacity of from 20,000,000 to 25,000,000 sq. ft. per month of corrugated paper products.

The equipment installation will be one of the most modern in the industry. According to Albert W. Sterritt, president of the firm, machinery will include: a Samuel M. Langston Co. 74-in. corrugator, F. X. Hooper Co. Inc. and S & S Corrugated Paper Machinery Co. printer-slotters, two Bostitch stitchers, and two Universal Corrugated Box Machinery Corp. tapers.

•

Idle American Tissue Mill Purchased

South Hadley Paper Mills Inc. has purchased the idle Pearl City Div. plant of American Tissue Mills. The South Hadley, Mass. mill has been shut down since last fall, when American Tissue went bankrupt. The new owner has already started putting the plant into shape for production.

It is thought that the purchase price was in the six-figure bracket. The property had been assessed for about $100,000 by the town of South Hadley.

The Pearl City unit is a fine tissue mill with two 76-in. Yankee machines. It will produce No. 1 machine glazed paper and may eventually turn out paper used in the manufacture of tea bags.

The newly formed South Hadley Paper Mills Inc. bought the defunct plant from American Mills Inc., successor company to American Tissue Mills. President of the former firm is Aaron Krok, Worcester industrialist who specializes in buying up bankrupt properties.

This is the second South Hadley mill of the defunct American Tissue to be disposed of by Krok. This spring the Stony Brook Div. was sold to Marcalus Co. of East Paterson, N. J.

•

$2 Million Louisiana Project Announced

International Paper Co. is spending an estimated $2,000,000 in the expansion and modernization of its plants at Bastrop, La.

The building program is a part of the firm's normal over-all re-investment policy. According to John L. Tower, "at the Bastrop mill, where we produce our corrugating medium—Chemifibre, changes are being made to increase the efficiency of the power plant. At the adjoining Louisiana mill, we are making changes, particularly to our bleach plant, which will improve the brightness and quality of the pulp and paper grades being produced there."

•

GM&O Builds 100 New Type Wood Rack Cars

The Gulf, Mobile & Ohio Railroad will construct 100 new type wood rack cars to serve the growing needs of the paper industry in its territory. The announcement was made at a meeting of the board of directors in St. Louis.

The cars will follow the design worked out some time ago by the GM&O and the mills and will bring the railroad's ownership of this improved unit to 800.

Constructed of cast steel underframes—eliminating the need for end wall bracing—the cars have a 40 per cent greater carrying capacity than those of the old design. A slatted floor makes cleaning unnecessary.

Construction will be in the rail-

THE OLD AND THE NEW at the Kenora (Ont.) Div. of Ontario-Minnesota Pulp & Paper Co., Ltd. where a 40-ton diesel electric crane has replaced a 31-year-old steam unit for the handling of limerock, coal and pulpwood. The new crane was supplied by American Hoist & Derrick Co., has a 50-ft. boom and can be used for switching. The older unit was purchased second hand in 1923 when the mill was under construction

Designed for maximum chip capacity, this belt conveyor employs Link-Belt 45° idlers. Note use of belt training idler in foreground for extended belt life.

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DESIGNED FOR OVERALL EFFICIENCY—Because of its unrivaled experience, Link-Belt can do a better job of gathering and analyzing all data. Proposals reflect this understanding of the most practical way to fit individual conveyors into your overall system requirements for best results.

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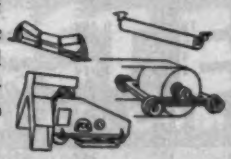
ASSURES SATISFACTORY PERFORMANCE—When you rely on Link-Belt as a single source for your complete system, we accept responsibility for placing it in full operating readiness. We will also supervise modernization of existing systems. For all the facts call your nearby Link-Belt sales representative.

BUILT FOR LONG-LIFE PERFORMANCE—Link-Belt manufactures all components and related feeders and conveyors. You are assured of the right equipment because of this breadth of line. And Link-Belt will supply the highest grade belts engineered to the specific job.



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News of the Industry . . .

road's own shops, with the frames being purchased from General Steel Castings Co., St. Louis.

•

Gardner Turns Down Medina

The Gardner Container Co. has decided against locating a $1,000,000 processing plant at Medina, Ohio.

In a letter to the Medina Chamber of Commerce, Melvin E. Barthen, president of Gardner, declared: "Considerations other than the desirability of Medina as a plant location carried greater weight in our conclusions."

•

K-C Plans New General Offices in Menasha

Kimberly-Clark Corp. has revealed plans for the construction of new general offices on land adjacent to its Lakeview Mill in Menasha, Wis.

Present headquarters of the firm is in a three-story 82-year-old building in Neenah which has been expanded many times. The old structure will become the new and larger quarters for corporation research and development.

Bids for the new general offices are to be let early in the spring, and construction is expected to be completed by the spring of 1956. The architectural and engineering firm retained by K-C is Skidmore, Owings & Merrill, the company that is currently designing the new U. S. Air Force Academy in Denver, Col.

The offices will be in two units with a combined floor space of about 100,000 sq. ft. The north building will be a two-story structure housing general management offices and those departments that are contacted by outside organizations. The south unit will be of one-story design. Both will have radiant heating, air conditioning and fluorescent lighting throughout. Steam and water will be supplied from the Lakeview Mill.

FIRST TREE FARM in the Canadian Maritime Provinces is certified in ceremonies near Fredericton, N. B.; John B. McNair, QC, former New Brunswick premier (right), is shown with the certificate for his woodlot, Parker's Ridge; the presentation was made by A. H. Monthouse, president of the N. B. Section of the Canadian Forestry Association, under whose sponsorship the tree farm movement is being organized in Canada

•

St. Marys Bleach Plant Starts Operation

Gilman Paper Co. of New York, N. Y., has announced that its subsidiary, St. Marys Kraft Corp., has put into operation its new bleach plant at St. Marys, Ga.

For the first time in its 45-year history as a manufacturer and converter, Gilman can now produce its own bleached pulp and papers. According to the firm, the bleach plant can be considered one of the most modern in existence.

The engineering design embodies up-to-date concepts of pulp bleaching, characterized by an unusually flexible arrangement of processing stages that permit the manufacture of practically any grade of bleached sulfate pulp.

•

$25 Million Project Scheduled for Vancouver

A $25,000,000 forest program, including a new pulp mill and public access roads on the west coast of Vancouver Island, B. C., has been proposed by a British Columbia firm.

British Columbia Forest Products Ltd. will advertise its application for a forest management license. Such a license would enable the firm to operate as a fully integrated forest industry on a sustained-yield basis.

•

Flax Waste Converted to Fiber Board

A new type of fiber board made from flax waste has been developed by agricultural engineers at Oregon State College in Corvallis.

The board makes use of the woody centers of the flax straw that are left after the hair-like fibers are stripped for use in fabrics. The waste centers —or shives—make up more than a third of the total flax harvest and un-

U. S. Paper and Paperboard Production

	Aug. 1954 (tons)	July 1954 (tons)	Aug. 1953 (tons)	Total 1953* (1,000 tons)	Total 1948 (1,000 tons)
Paper and Board, total	2,289,744	1,991,143	2,311,760	26,459	21,897
Paper, total	990,916	858,170	962,111	11,394	11,119
Newsprint	161,958	99,410	90,981	1,069	876
Groundwood paper (uncoated)	67,377	54,730	66,751	771	772
Printing and converting (coated)	105,242	95,257	100,330	1,182	809
Book paper (uncoated)	135,415	106,764	141,465	1,623	1,570
Fine paper (writing, cover and text, bristols, thin paper and other)	11,279	91,363	108,168	1,290	1,141
Coarse paper (unbleached kraft, glassine, greaseproof, vegetable parchment and other)	293,602	252,002	286,756	3,398	3,027
Special industrial paper (including absorbent)	43,966	34,475	43,251	553	415
Sanitary tissue stock	111,231	108,381	104,718	1,277	983
Tissue paper (except sanitary and thin paper)	19,848	15,779	19,791	231	205
Paperboard, total	1,030,383	883,583	1,098,152	12,220	9,366
Container board, total	559,826	484,164	604,121	6,613	5,079
Liners	370,334	318,737	407,043	4,411	3,347
Corrugating material	165,401	145,540	167,821	1,906	1,376
Container chipboard	24,091	19,887	29,257	296	319
Bending board	305,966	264,633	319,141	3,566	2,153
Nonbending board	77,379	56,504	89,815	898	597
Special paperboard stock	80,486	71,807	78,697	1,071	1,568
Cardboard	6,726	5,456	6,378	72	87
Wet machine board, total	10,844	8,431	12,960	155	142
Construction paper and board, total	257,601	241,979	238,537	2,688	2,591
Construction paper	125,948	115,179	121,878	1,312	1,321
Hardboard and insulating board	131,653	126,800	116,659	1,376	1,270

(*) Preliminary report. Source: U. S. Department of Commerce.

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Common drugs well-known for rapid action dissolve no faster nor more completely than West End Soda Ash.

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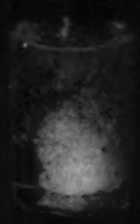
A far cleaner, more uniform product results from using this extremely soluble soda ash. West End ash is a minimum 58% Na_2O and averages 58.25% or more. Insolubles that can contaminate mixes are never present.



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News of the Industry . . .

til now have been considered a total loss industrially.

•

"King" Pulpwood Replaces "King" Cotton in Alabama

In five years of operation Coosa River Newsprint Co. at Coosa Pines, Ala., has paid more than $20,000,000 for pulpwood produced in seven surrounding counties. That $20,000,000 exceeded the value of the cotton produced in the same counties during the period. Cotton was formerly the principal cash crop in the area.

Company estimates have shown that new growth in the seven-county area will be sufficient to supply the mill's needs when the current 120,000-ton annual capacity is increased to 140,000 tons during the coming year.

•

Expansion Notes

National Container Corp. has officially opened its newest kraft paper converting plant at Salisbury, N. C. The plant has a floor space of 152,000 sq. ft. It will provide corrugated kraft paper shipping containers and allied products to users in the Carolinas, Tennessee, Virginia and West Virginia.

Container Corp. of America has acquired 190,000 shares of the common stock of the Mengel Co. of Louisville, Ky. Mengel manufactures hardwood products, including corrugated fiber shipping containers.

Marathon Corp. has announced that it will build a food packaging specialty and labeling plant in Neenah, Wis. The structure will have more than 100,000 sq. ft. of floor space for manufacturing and office use and will augment the functions of the Parafilm plant in Menasha.

Victoria Paper Mills has resumed operations at Fulton, N. Y. following a brief shut-down. It is reported that union workers voted a pay cut in order to assure continued production.

•

Upson Modernizes Laminator

The world's largest seven-ply laminator has undergone a complete revamping and modernization at the Upson Co. in Lockport, N. Y.

The project, which was under the direction of Henry W. Schmidt, Upson vice president, was engineered by the Dilts Machine Works Div. of the Black-Clawson Co.

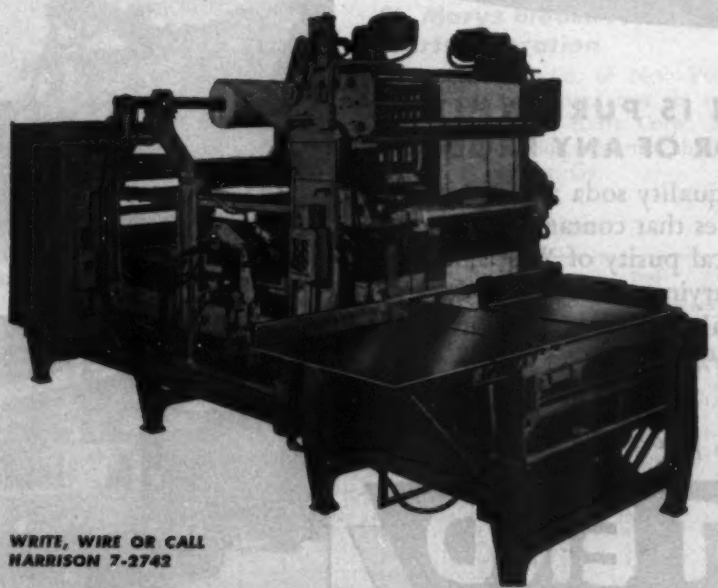
WORLD'S LARGEST laminator recently modernized at the Upson Co. The unit is 507 ft. in length

The machine is 507 ft. in length. Modernization included replacement of the drive; a revamping of the panel stacking method; a new panel take-off station; a stronger cut-off knife, and a rebuilding of the laminator. Also, the addition of seven Dilts rotable reels with pasting roller for flying starts, transfer tables for easier roll handling, and a Reliance VS drive.

When you want Packages as good as your Paper —

this machine will give them to you — wrapped, sealed and labeled in one automatic operation. Precision formed, dust and dirt free, uniformly finished — 100% protection of your high quality merchandise.

Ten ream packages per minute. Sizes ranging from 17 x 22 through 23½ x 35½ — 1" to 3" bulk. Let us consult with you on how this machine can be profitably adapted to your requirements — giving cost and installation information.



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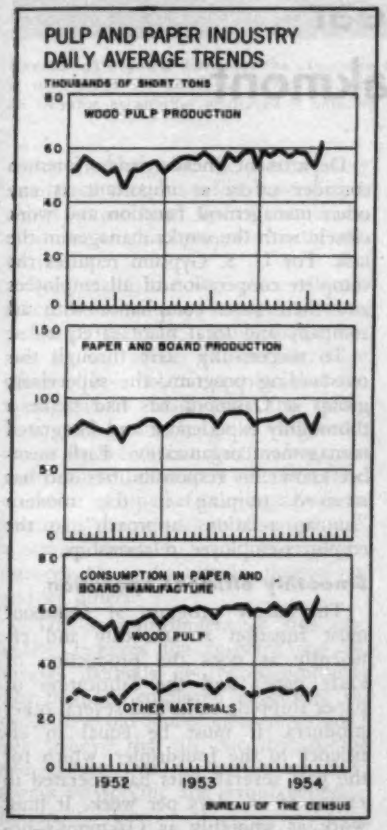
August Pulp, Paper and Board Production

Paper and board production during August amounted to 2,289,744 tons, according to a report released by the Bureau of the Census. This is 1 per cent below the 2,311,760 tons produced in August 1953. Paper production amounted to 990,916 tons, almost 3 per cent above the 962,111 tons produced the year before. The output of paperboard during the month was 1,030,383 tons, reflecting a 6 per cent decrease from the production of 1,098,152 tons reported in the same month of 1953.



Pulpwood receipts at the pulp mills during August amounted to 2,512,755 cords with consumption at 2,527,748 cords. Month-end inventories at 4,720,663 cords showed a slight decrease.

Wood pulp production during August amounted to 1,571,940 tons, as compared to the 1,530,491 tons produced in the same month a year ago.

Wood pulp inventories at the end of August at the paper and board mills amounted to 498,558 tons, showing a 2 per cent decrease during the month. Month-end stocks at the pulp mills were 170,693 tons.

New Brunswick Spraying Called "Successful"

"Operation Budworm 1954" has now been conducted to its successful conclusion in New Brunswick and eastern Quebec, according to officials of Forest Protection Ltd.

In New Brunswick a fleet of 42 spray planes, operating from five airfields, sprayed more than 1,000,000 acres of woodlands, while in Quebec 14 planes covered an additional 300,000 acres. (The Quebec operation was directed by the Quebec Forest Industries Association, but technical assistance was supplied by Forest Protection.)

It was indicated that the project was the most successful one in some respects since the first one was launched in 1952. Favorable weather conditions made it possible to conclude the work in record time, and the insect was hit at the best time in its development.

Current Opportunities
Turn to Page 850 & 851

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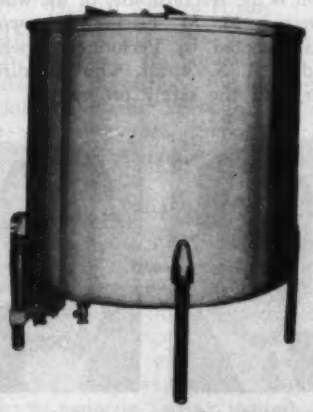

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1953 Fritz Trophy Winner . . .

U. S. Gypsum's Scope of Operations . . .

United States Gypsum Co. owns and operates 48 plants in the United States and Canada. The firm is engaged in the manufacture and distribution of a widely diversified line of building materials.

The Oakmont, Pa. operation produces kraft paper from wood pulp and fabricates multiwall paper shipping sacks and several types of tape paper. All these products are used by other USG plants in packaging the materials they produce.

U. S. Gypsum achieves sixth year without a lost-time injury at Oakmont

THE SAFETY OF all employees is the first consideration in the operation of every plant in the widespread United States Gypsum Co. organization.

That policy has achieved for the Oakmont, Pa. operation the coveted Edward Benton Fritz Memorial Trophy for 1953. The award is made each year by THE PAPER INDUSTRY during the National Safety Congress in Chicago. The winner is determined by a board of judges to be that mill entered in Division I of the NSC pulp and paper safety contest that has achieved the most outstanding record during the contest year. The presentation was made October 18.

And, more important than a trophy, the USG safety policy has paid off at Oakmont in efficient and happy employees. There have been no family tragedies or broken bodies to detract from the employee's appointed task.

Oakmont experienced its last reportable injury in 1948, when the frequency rate was 6.68. In 1949 the plant recorded a 100 per cent improvement with a 0.00 rate and has maintained that pace through 1953, the year for which the Fritz Trophy was awarded. In that year the 185 employees worked 355,872 safe man-hours.

Record of long standing

Through December 31, 1953—the end of the contest year—the Oakmont plant could boast 1,697,588 man-hours since that last reportable injury. On October 6, 1954, it had been six years since the last lost-time accident; and five days later on October 11 the record had been extended to 2,000,000 safe man-hours.

Such an outstanding achievement is not the result of good fortune alone. It derives from long hours of hard work on the part of the safety staff. As at all USG plants, safety at Oakmont is the responsibility of the works manager, M. M. Fischer. His work is augmented by Personnel Superintendent R. S. Stover, who has direct charge of the safety program.

M. M. Fischer
Works Manager

R. S. Stover
Personnel Supt.

Edward Benton Fritz Memorial Trophy that was presented to Oakmont during the recent National Safety Congress in Chicago. Last year's winner was Ecusta Paper Corp., Pisgah Forest, N. C.

Department heads and foremen consider safety as important as any other management function and work closely with the works manager in the task. For U. S. Gypsum requires the complete cooperation of all employees and their strict compliance with all company and local plant safety rules.

To successfully carry through this outstanding program, the supervisory group at Oakmont has had to be a thoroughly experienced and integrated management organization. Each member knows his responsibilities and has received training in the modern "human relations approach" to the employer-employee relationship.

Smoothly efficient operation

The safety program at Oakmont must function as smoothly and efficiently as does the production of kraft paper and the fabrication of paper shipping sacks and several other products. It must be equal in efficiency to the fourdrinier, which for the past several years has operated in excess of six days per week. It must work as smoothly as Oakmont's up-to-date mechanical equipment for materials handling.

The works manager has a big job on his hands and devotes a considerable portion of his daily schedule to safety as an important management function. Much of his time is spent in the plant observing work habits; discussing specific safety conditions and habits, and suggesting specific improvements that will prevent injuries.

His sincere and serious interest in all matters affecting the safety of the employees is demonstrated daily to individual workers. This has created a profound respect for accident prevention.

Important in USG's safety efforts

Elevator gate guard illustrates the use made of hinged safety gates in work areas. An employee is moving a heavy roll of paper from an elevator as another employee is entering the traffic area

Area where heavy raw material is loaded on a tilt conveyor is chained off and may be opened only when loading the conveyor. Sign at left warns that only fork trucks are allowed in the area

is the knowledge on the part of every supervisor that his effort towards accident prevention is an important measure of his progress with the firm.

Recognizing the vital place of communications in any successful safety program, the USG management has this to say about its company-wide efforts: "It is not our opinion that our management's basic plan for safety is an end in itself, but is rather the means by which our local safety program can be made most effective. The objective of our safety program is to create in the minds of all employees a strong desire to avoid the consequences of an injury to themselves and/or others.

"The accomplishment of this objective requires the constant use of various methods of communications. The methods employed must vary in order to avoid monotonous repetition. We believe that in our discussions and contacts with our people we must always be specific and avoid generalization."

Among Oakmont's present methods of communication are the following:

Weekly Interviews

Each supervisor is required to interview four or five employees under his jurisidiction. The subject must specifically concern safety, and a written report must be made.

Departmental Safety Group Meetings

Supervisors are required to hold frequent and regular 30-minute departmental safety group meetings. These are conference—rather than lecture—type gatherings and are designed to encourage comment and active participation on the part of all who attend. Films and safety graphs are frequently used.

Hazard Report Forms

These forms are simple and provide each employee the opportunity to convey his suggestions for the elimination of hazards. Through their use the supervisor can demonstrate his sincere desire to eliminate unsafe conditions.

Message Repeater

Stepping on a rubber mat on the floor directly beneath the time clock activates a 30-second tape recording concerning a specific safety subject. The "message repeater" is used only once or twice a week. The subject matter is not always safety, this in order to maintain listener interest.

When using the time clock an employee steps on a rubber mat that activates a "message repeater" in the small metal cage overhead. Thirty-second safety messages are repeated once or twice weekly

Posters

Attractively colored safety posters are used at fixed locations throughout the plant. These are of two sizes only: 17 by 23 in. and 25 by 38 in. The subject matter is sometimes treated in a humorous vein.

Works Manager Meetings with Department Superintendents

These meetings are held at least once a month and always include a discussion of a specific safety matter. Such subjects are then discussed by the superintendents and the supervisors in individual meetings.

Safety Signs and Slogans

These are lettered on stairways, on walls, on trucks and carts, etc. In some instances such slogans are general, while in others they are specific warnings against an existing danger in that location.

General Safety Committee Monthly Meetings

All supervisors regularly attend these meetings, which are designed to be both interesting and instructive. Active participation is encouraged.

New Employee Indoctrination

The USG safety rule book is presented to each new employee. He is introduced to the methods of accident prevention by both the personnel superintendent and the works manager. The specific hazards of his job are brought to his attention.

The big three

Safety awareness on the part of employees comes not only as the result of these nine projects. Three continuing features of plant safety are vital to the program's success:

(Turn to page 815)

Fire protection in the paper industry*

R. C. MAX
Factory Insurance Assn.
Milwaukee, Wis.

Condensed by D. S. Davis
Department of Chemical Engineering
Virginia Polytechnic Institute

▶ Forty five per cent of all fires in the pulp and paper industry are attributed to common hazards, 37 per cent to special hazards, and 18 per cent are of unknown origin

▶ New spray sprinkler heads provide 20-30 per cent more coverage than the older heads. Mechanical dust collectors should be provided at winders, rewinders, calenders, trimmers, and automatic packaging equipment

FIRE PROTECTION in the pulp and paper industry is attained by close attention to building construction, fire fighting equipment, proper storage, and personnel training.

Building Construction

To evaluate a building for a specific purpose, the height, type of construction, size of areas subject to fire, exposure and fire protection, appearance, cost, and ability to resist fire must all be considered in any decision to construct one of five types of structure: fire-resistive, non-combustible, heavy timber, common masonry joist, and wood frame. Wooden structures should be avoided in the paper industry in favor of the first three types, although heavy wood beam and post supporting members, even when charred, resist collapse satisfactorily. Coarse aggregate concrete offers excellent protection to steel columns, which do not resist fire well.

Manufacturing and storage areas should be separated from each other by fire barrier walls; further segregation can well take the form of ceiling draft curtains for large unbroken areas, enclosures or curtains around stairs, conveyor openings and elevators, and water curtains. Fourdrinier machines should be separated by fire barrier walls to prevent exposure of all in an unbroken fire area.

In wood structures in some of the older paper mills the following features contribute to fire hazard: concealed low spaces, ceiling and attic spaces, hollow walls, boxed cornices, wooden roofs, and wooden shingles. Particular care should be exercised during periods when buildings are under construction or repair since at these times permanent methods of fire protection are usually out of service. At such simes, storage of combustibles should be kept at a minimum, flameproofed tarpaulins should be employed, and welders should be cautioned.

Protection equipment

Pulp and paper mills, the first to install automatic sprinklers when these made their appearance in 1875, have continued to rely on this means of protection which derives much of its effectiveness from the fact that sprinklers are always on "guard" and ready to go into instant action. In the paper industry sprinklers should be installed in all parts of the mill where wood is employed in the structure and where combustibles are used or stored. To be well-sprinkled, a mill should be equipped with a complete system, competently maintained, in which modern devices are employed, and in which pipe sizes meet the present-day standards. Sprinklers should be backed with ample and reliable water supplies, capable of being augmented by the public water system should the need arise. While water is fortunately plentiful in nearly every paper mill, river water is not always well adapted to sprinkler use, save with frequent flushings to remove detrimental solid matter. The new spray sprinkler heads, which provide 20 to 30 per cent more coverage than do the older heads, should be used in view of the effective manner in which they distribute the water. Regular inspection of sprinkler systems supplemented by competent maintenance is a necessity.

In the paper industry, ordinary fire hazards include the various types of pulp: sulfite, sulfate, semichemical, groundwood, rag, old paper, and straw. Chips, sulfur, paper dust, flammable fluids used for coating and printing processes constitute special fire hazards, and all areas in which these materials are used or stored should be protected by sprinkler systems. Fires in chip bins are hard to fight because of the depth of the chips, their elevated position, and the generation of smoke and extreme heat. Auxiliary open sprinkler piping with manual controls are helpful, as are discharge hatches and the use of saturated (not super-heated) steam, which is often available anyway for the purpose of dislodging chips.

Sulfur in dead storage presents no unusual hazard, but sulfur in motion during conveying or dumping is dangerous because of the explosive character of the dust which is comparable to that of powdered cork, bituminous coal, rubber, rice starch, and tapioca flour. In connection with sulfur, the usual precautions in handling powdered combustibles should be taken: dust-tight enclosures, removal of dust deposits, elimination of sources of ignition, use of Underwriter's Laboratories' approved electrical equipment, installation of magnetic separators to remove spark-producing matter, and the provision of vents to the extent of 1 sq. ft. of vent area for 50 to 80 cu. ft. of room volume to minimize structural damage in the event of an explosion.

Mechanical dust collecting equipment of the forced suction type should be provided at winders, rewinders, calenders, trimmers, and automatic packaging machinery to eliminate the fine paper dust. Wooden hoods over fourdrinier and Yankee machines should be replaced by asbestos board mounted on steel frames in view of the combustible nature of the dust and linters, the running paper sheet, the dryer felts, the lubrication systems for bearings, and the contents of the broke pit. Sprinklers installed in the hoods offer adequate protection.

Proper storage

Since a large part of most mills is devoted to storage of raw materials,

(Turn to page 815)

*Original paper published in Tappi, 37 (2) 65-72 (1954).

Structural aluminum resists corrosion in the pulp and paper industry

J. R. AKERS* and JERRY GAMMON
Reynolds Metals Co.

Aluminum walkway and handrails at a large paper mill—these are subject to the corrosive action of all the vapors emanating from the plant, as well as to the destructive effect of sea water spray

CORROSION OF METALS used in equipment and structures has long plagued the pulp and paper industry. While not in actual contact with the processing liquors, these metals are subjected to the corrosive action of chemical fumes, dusts, dirt, and moisture. The answer to these corrosion problems may be the light, strong, and corrosion-resistant metal, aluminum.

Chemically, aluminum is a very active metal. However, it resists chemically contaminated atmospheres because of its naturally-formed coating of aluminum oxide, always present on the surface of the metal. This oxide film is chemically inert and is insoluble in many reagents. Aluminum exhibits excellent life outdoors, including exposure to industrial atmospheres and to salt spray near the sea coast. In addition, aluminum possesses remarkable "self-healing" properties.

Because of this resistance to corrosive fumes, and because of its light weight and low maintenance costs, an ever-increasing interest is being shown in aluminum. Aluminum and its alloys are being used by the industry for ventilating ducts, screen covers, walkways, railings, ladders, suction boxes, conduit, and certain pipe lines. In logging operations, aluminum logging chutes and flumes are being used successfully.

There are also indications that aluminum will find increasing use in the pulp and paper industry in such applications as roofing, siding, and structurals, because it needs no painting and has a much longer life than the metals now commonly used.

To obtain a satisfactory life from other metals commonly used in plant construction, periodical painting is imperative. This is not true of aluminum, because of its characteristic "self-healing" properties. Any corrosive attack on the metal by most contaminants in the atmosphere tends, at the same time, to coat the metal with more aluminum oxide and thus lessen the rate of each successive attack and with increasing time of exposure.

The self-stopping characteristics of the protective oxide film on aluminum is well illustrated by the results of a 14-year test of a number of aluminum alloys exposed to a highly contaminated industrial atmosphere. The alloys tested were 2S, 3S, 4S, 51S, and aluminum containing 2 to 6 per cent magnesium. Specimens were in the form of 0.064-in. thick sheet. The panels were exposed at 45° facing south. Fifty-six lots were tested. The average rates of corrosion during this period were as follows:

Time	Top Surface (inches)	Bottom Surface (inches)
2 yrs.	.0015	.0020
5 yrs.	.0018	.0023
8 yrs.	.0018	.0027
14 yrs.	.0019	——

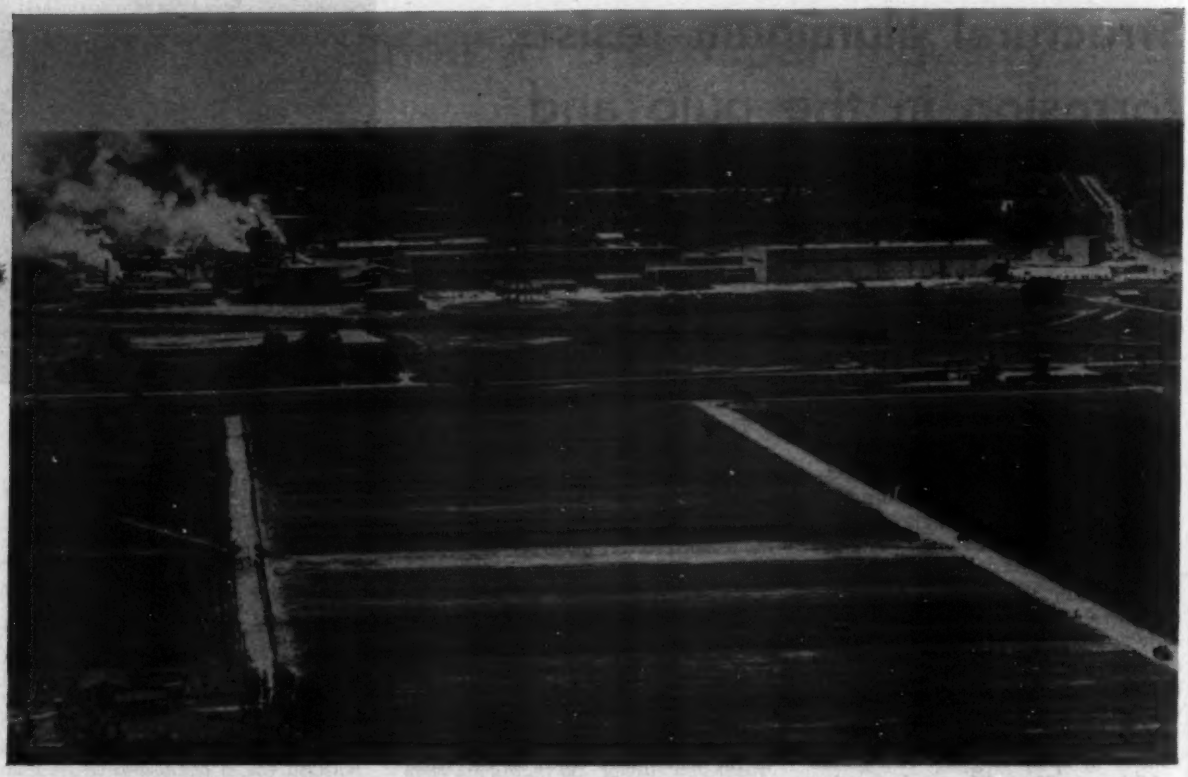
Thus, if the depth of corrosion were plotted against time, the curve would rise rapidly at first, then flatten out and become almost parallel with the time axis. This self-limiting behavior of aluminum alloys has been demonstrated by long-term exposures at other test stations and in practical applications.

Thus, with increasing use of light-metal aluminum, the over-all use of which is now second only to steel, one of the pulp and paper industry's most bothersome problems—corrosion—may be solved.

*Mr. Akers is chief corrosion engineer for Reynolds Metals Co.

Six aluminum hood exhaust stacks—dryer sections for the kraft board mill. Note also the aluminum handrail and walkway

Exhaust for vacuum washers. Note undamaged aluminum, in contrast to the "eaten-away" steel section



St. Regis' southern pine seeding nursery at Pensacola, Fla., with the paper mill and multiwall bag factory in the background

St. Regis' reforestation program in Florida

MARION L. BRIGGS

▶ St. Regis' Pensacola and Madison nurseries yield some 25,000,000 seedlings annually. Of these about 3,000,000 are supplied free to individual tree farmers in Florida, Georgia, Alabama, and Mississippi

▶ A typical case history shows that tree farming for continuous production is profitable business in the South

ST. REGIS PAPER CO. is insuring an adequate future woodpulp supply for its Pensacola and Jacksonville, Fla. mills by maintaining a steadily expanding seedling nursery and reforestation program.

Its southern pine nursery at Pensacola has come up from a capacity of 5,000,000 seedlings in 1948 to more than 18,000,000 currently and is the first industry-owned nursery in the South, as well as the largest in the United States. Its Jacksonville mill nursery at Madison is producing from 6,000,000 to 8,000,000 seedlings a year. This brings the total present capacity of the company's southern pine nurseries in Florida to around 25,000,000 seedlings annually.

An important factor in the St. Regis seedling development program is the increasing number of individual tree farmers who need seedlings for planting. St. Regis gives away to these farmers and woodland owners, within its pulpwood procurement area, approximately one-sixth of its pine tree seedlings, or around 3,000,000 each year. This represents more than 1/10th of the total 31,000,000 tree seedlings provided free to landowners annually. St. Regis seedlings go not only to Florida woodland farmers but to those in the neighboring states of Mississippi, Alabama and Georgia.

Replenishment ahead of consumption

Replenishment is held far ahead of consumption. For example, in 1953, St. Regis' Florida mills used over 460,000 cords of wood, or about 4,500,000 trees. Its seedling nurseries' output was close to 18,000,000, or about four times ahead of use.

Mechanical tree planter and equipment for use in planting southern pine seedlings

Modern fire tower amid growth of southern pine is an example of up-to-date protection practices

Demonstration acre of southern pine 17 years after planting by the Tate, Fla. High School

Boys of the FFA chapter at Tate High School collect pulpwood on the school's demonstration acre

This high margin of replenishment above use is adequate insurance against loss or damage to young trees after planting. It also increases the potential yield of idle acreage or sparsely treed land.

Fortunate for St. Regis, more and more farmers and small landowners are taking up tree-growing as a crop. The company purchases 75 per cent of the timber for its Florida pulp mills, so needs a larger source for future supply than it can provide on its own timberlands.

Distribution and planting methods

Before distributing seedlings to its own forest tracts or to farmers and woodlot owners, the company promotes a high survival rate by a careful system of inspecting and sorting. February is the principal time for planting southern pine seedlings.

Nursery employee inspects one of the 12,000,000 seedlings raised last season at the St. Regis Pensacola nursery. Its capacity has been increased to an annual 18,000,000 seedlings

Upon receiving the seedlings, farmers and timberland owners must agree to plant them, use good management methods on their woodlands, and employ selective cutting in order to have continuous production. They must also guarantee to provide protection from fire, insects, disease and destructive grazing livestock.

In planting, the most economical method for the tree farmer, the company claims, is to use a mechanical tree planter in open fields on a large acreage or in areas where the land is sparsely treed. On small woodlots, it advises, it is best to do the planting by hand.

Several counties in the Pensacola area make mechanical tree planters available to farmers and landowners for a nominal fee, and in some localities banks do the same. The cost of mechanical planting runs from $8 to

$15 an acre, depending upon the kind of land being planted and its size. Several thousand pine seedlings a day can be set out by machine.

By hand, a tree farmer is able to plant between 800 and 1,000 pine seedlings a day, according to how far apart he spaces them. Planting distances are usually 6 to 8 ft.

After the seedlings are planted, there is no cost for cultivating, as with other crops. For good practices in thinning and cutting, the individual farmers and timberland owners can get instruction from St. Regis foresters, or from the country farm foresters. They learn that with selective cutting the value of a woodlot does not depreciate but increases every year, and that for continuous production the cutting must be controlled, so there are always trees growing into a saleable or usuable size.

Yields and income

Southern pine reaches pulping maturity in about 17 years, and the annual replenishment with seedlings allows for a continuous yield.

St. Regis considers that the rate of growth of southern pine seedlings after planting depends upon soil and drainage conditions. It may be as high as two cords per acre per year.

Good land, planted and protected from fire and other damage, may yield from one to two cords an acre every year. Average timberland that has reseeded itself and has not had modern management will produce from one-half to three-fourths cord per acre. Sparsely treed acreage might yield as little as one-third cord per acre.

What this means to the farmer or small woodlot owner, and why he is willing to cooperate with St. Regis, as well as other pulp and paper companies in the South, in its reforestation program, becomes evident from the following figures:

Assume, for example, a price of $5 per cord for pulpwood before cutting. The gross a farmer might get from a good timberland lot under modern management might go as high as $10 an acre. From less profitable acreage, he would obtain a gross somewhere between $1.50 and $5 per acre. If he cuts his own wood and trucks it to the St. Regis mill, his return will be relatively greater. Generally, however, the farmer sells his timber "on the stump" to an agent and skids it to a roadside loading point to be hauled away by the timber purchaser.

The farmer cooperates in the reforestation program not only because he may need a continuous money crop, but often to provide a future investment for his children. Sometimes his purpose is just to raise the value of his land. He finds that, although profits from his tree sales are taxable at the current maximum rate of 25 per cent on capital gains, he can make deductions for fire and storm damage and other casualties.

Woodland farmers who do not get their pine seedlings from St. Regis or other pulp and paper companies can buy them for about $3 a thousand from the state nursery. Their plots vary in size from one acre up, and often farmers reclaim land going to waste with sedge grass, or cut over with rotting stumps, or consisting of useless rocky areas.

A typical case history

St. Regis finds some tree farmers within its pulpwood procurement area are growing pine tree crops in more than one state. One such farmer has a tree farm in Mississippi and another in Alabama. After acquiring 400 acres in Alabama in the early 1940's for about $1,000, he made his first cut seven years later, totalling 30,000 ft. and bringing him $480. Four years later, he sold poles and pilings for around $2,000, then the next year got $90 for fence posts, etc. from thinning. Recently, he obtained close to $1,500 for 48,000 ft. of sawtimber and pulpwood, largely southern pine.

This same owner bought land in Mississippi about a year ago and set out 5,000 pine seedlings the first year and 8,000 more in 1954, mostly in open fields. His case illustrates tree farm operation for continuous production, the principle of the St. Regis pine seedling program. Such a farmer gets return on his investment several times over.

Scholarships in forestry

St. Regis offers several scholarships in forestry to promising college students in their junior year. For the academic year 1953-54, it awarded five undergraduate scholarships, three in the South, and one each in the Northwest and the Northeast. Each amounts to $800 a year for a period of two years, and students are selected by a St. Regis company official with the aid of the regional forester of the U.S. Forest Service and usually the respective state forester. During the summer, after their first academic year of training under the scholarship, the winners are employed by St. Regis on some forestry project, and their continuance as recipients of the scholarship during their senior college year depends upon their record in the field as well as in the school.

The company also awards a graduate scholarship in forestry, valued at $1,000, to a first degree holder who is planning to take graduate work at any accredited school of forestry in the nation. The individual getting this award is expected to study along lines of value to the pulp and paper industry. He is chosen by the chief forester of the United States, or his delegate, together with the assistant forester in charge of research, and the technical director of forestry for St. Regis.

In addition to its scholarship program, to promote interest in reforestation, the company has its representatives speak to school children and teachers on the subject. And school chapters of the Future Farmers of America operate demonstration areas.

Tate High School's experimental acre

For example, the Tate High School just north of Pensacola planted an experimental acre of slash pine along Palafox Highway on a piece of donated land in 1929.

This was cared for by the school's agricultural department, and was publicized by the state forest service as an illustration of good tree planting and protection.

After 17 years, the first cutting on the school plot was made with a yield of 16 cords of pulpwood. This was collected and stacked by the high school boys. Nineteen cords were then left standing.

In July 1954, a final cutting was made to make way for a new highway. The yield, after 24 years, was 36 cords, bringing the total production of the single acre to better than two cords per year.

This demonstration acre is said to have done as much to advance the cause of reforestation in Florida as any other one acre of land.

Florida agricultural school students, FFA boys and 4-H Club members receive instruction in planting, protection and management of pine tree seedlings as a part of their school or group program.

St. Regis Paper carries on an extensive research program through which it is demonstrating just what constitutes successful growing methods for southern pine. From its own forest tracts, it is passing this information on to individual tree crop farmers and timberland owners, and is putting emphasis on pest control, selective cutting, and clearing for more rapid growth. It is also stressing fire prevention techniques.

The company's educational efforts form an important part of what is termed one of the most vigorous education projects in Florida.

Progress through research*

M. J. AUCHTER
Vice President
Charmin Paper Mills, Inc.

Torula yeast, a valuable source of vitamins and amino acids, is successfully used in the feeding of poultry, hogs, cattle, sheep, mink, and hatchery fish. Even a lion cub has responded most favorably to this vegetarian diet.

EXPENDITURE FOR ALL RESEARCH and development in the American economy is currently at a rate of nearly 4 billion dollars annually, or more than four times as much as in 1941. It is not a question as to whether a firm or an industry should carry on research work in its broadest sense; not to do so is to gamble with survival.

More than 3,000,000 tons of sulfite pulp are made in the United States annually. Since the cellulose produced is a little less than 50 per cent of the dry weight of the wood used, the sulfite industry also produces more than 3,000,000 tons of sulfite liquor solids—including at least 600,000 tons of sugars and 2,400,000 tons of lignin. Not more than 10 per cent of all sulfite liquor is being recovered today for by-product utilization. All the rest is being thrown away.

Sulfite research league

Fifteen years ago J. M. Conway, president of Charmin Paper Mills, conceived the thought that a more intensive, more seriously grounded research attack might be made on the problem of spent sulfite liquor if a cooperative research group could be formed specifically for that purpose. His idea was well received by a number of neighboring mills. Within a few months he succeeded in setting up a non-profit research organization called the Sulphite Pulp Manufacturers' Research League. It comprises 13 sulfite mills in Wisconsin and one in Michigan. The 14 mills — representing 11 companies—produce at least 90 per cent of the sulfite pulp manufactured in the two states.

These mills pay into the league an annual assessment based on their sulfite pulp production—at present 33 cents a ton. This yields an annual budget of about $150,000, all of which goes for research. Each member company has a representative on the board of trustees who is usually the company's chief executive and a representative on the technical committee, who is usually its top technical man.

Concentration of sulfite liquor

Concentrating spent sulfite liquor and burning the solids was an early and obvious idea for anyone trying to cope with this waste material. But the liquor proved extremely difficult to evaporate. Its heavy calcium content scales up the surfaces of conventional evaporators and quickly lowers the heat transfer rate. The Swedes' need for fuel gave them an incentive; their engineers designed evaporators in which the scale is periodically dissolved by channel switching. Since then, other methods for handling this scaling problem have been discovered.

In 1949, the research league sent three of its technologists to Sweden to study the evaporator installations made in that country. Upon their return, the league installed a small Swedish evaporator in the pilot plant at Appleton. Pilot plant runs established the effectiveness of the channel switching method in coping with the scale formation problem, and subsequently numerous burning tests were made in the boiler plants of member mills. Within a relatively short time, team work solved the burning problem, and three member mills ordered evaporators.

Those three units are all at work today. One is at Rhinelander; where it concentrates liquor after de-sugaring in a yeast plant. The other two evaporate whole liquor. All three concentrate the liquor from 10-15 per cent solids to 50-55 per cent solids. The evaporated product is either burned in their boilers to produce steam, or is sold as concentrated or dried liquor solids for a number of uses. The fuel value of the 50 per cent concentrated liquor ranges from 3500 to 4000 B.T.U. per pound.

Uses of sulfite liquor

Sulfite liquor solids have interesting properties which have opened up a research where it seemed that a low-cost material could be used in quantity. Availability of concentrated liquor opened markets which could not be reached by digester strength liquor, and this speeded the study. Two outstanding properties of liquor are that it has a dispersing ability and a binding or adhesive ability. Uses for the dispersing property are found in oil well drilling muds, insecticides, carbon black for rubber goods manufacture, textile detergents, dyeing, boiler water treatment, Portland cement manufacture, concrete mixes, pitch dispersants in the paper industry, storage battery plates — to name just a few.

As a road binder

The largest volume use of spent liquor's adhesive properties is as sulfite road binder. In 1953, more than 3,000 miles of Wisconsin gravel roads were treated with this material principally to eliminate dust and mud, decrease loss of aggregate, and reduce blading costs. This mileage will probably reach 4,000 by the end of 1954. Road officials who have used sulfite road binder estimate their annual savings between $200 and $300 per mile depending on local conditions. It also has a growing acceptance for stabilizing the base of roads before paving. Miscellaneous uses are innumerable — parking lots, drive-in theaters and restaurants, unpaved airport runways, etc. Road binder volume has grown steadily ever since a league member mill discovered that the way to use it is to flow it on a gravel road rather than to sprinkle it on lightly.

Road binder use has been confined principally to northern Wisconsin until this summer. Then, an alert trucker decided he could make money by buying 50 per cent solids liquor from a mill's evaporator

*Condensed from a paper presented at the September 1954 meeting of the Great Lakes Power Club in Green Bay, Wis.

plant, haul this a few hundred miles south, and sell it for road binder after rediluting it. His company franchised dealers in the border tiers of counties in Wisconsin and Illinois, and has sold substantial gallonages there. Illinois state road officials found this process so interesting that this month a plane load of them inspected Wisconsin roads. They went home eager to spread the use of sulfite road binder still farther south in their state.

Other applications of the adhesive quality of spent sulfite liquor, chiefly in the evaporated form, include linoleum cement, briquetting of coal, charcoal, iron and other ores, wettable gum tapes, hard board and building boards.

Fermentation products — torula yeast

An obvious way of utilizing some of the components of spent sulfite liquor is by fermentation. Certain organisms are known to grow and reproduce in sugar solutions and, either the organism itself or by-products formed by its growth, can be used for commercial products. Thus, the sugars might be used for the production of alcohols, yeasts, and other organic compounds. The sugars from wood are a mixture of hexoses and pentoses varying in proportion according to the species of tree, but averaging not far from 50-50. Ordinary saccharomyces yeast—the ordinary brewers and bakers yeast used in the fermentation of alcohol—ferments hexoses but cannot handle pentoses. Thus, an ordinary yeast fermentation, or alcohol production, would utilize only about half of the sugar available in most woods. Of all of the processes investigated for the utilization of the sugars contained in spent sulfite liquor, *torula* yeast production was the most promising. This organism consumes and thrives on both hexose and pentose sugars. *Torula* fermentation produces too little alcohol to be worth recovering, but the *torula* organism itself is largely protein and has a high content of valuable vitamins. The original discovery of this process was made in Germany during World War I. Laboratory and pilot plant developments were carried on prior to and during World War II. The Germans built several commercial plants to produce dried *torula* as a protein food for their population. When they ran short of protein feed for army horses, they also used the *torula* from these plants for horse feed.

After exhaustive pilot plant runs, the research league constructed a $500,000 experimental commercial scale plant at Rhinelander in 1944. Modifications of the German process and the league's own process are incorporated in the facilities of this plant. For a number of years it was owned by members of the research league and was operated by the research league staff. It served its purpose and produced the information now available to all league members. Eventually it was sold to one of the member companies. It is still manufacturing and selling *torula* yeast, which is marketed in various grades for both human and animal consumption.

Our company, Charmin Paper Mills has in the final stages of construction a *torula* yeast plant designed for somewhat more than double the capacity of that first unit. This new plant incorporates further improvements resulting from experience of the league technical staff at the Rhinelander plant. We expect to be in production at the end of this year. Our production of *torula* yeast for human and animal consumption will total about 5,500 tons annually.

Uses of torula yeast investigated

The research league has conducted an active program of research to find the uses and limitations of *torula* yeast. It has supported fellowships at a number of leading agricultural colleges to investigate *torula* value in livestock and poultry feeds. The agricultural scientists have found that *torula* is of great value as a source of vitamins and amino acids in the feeding of poultry, hogs, cattle, and sheep.

The Wisconsin Conservation Department made extensive tests and proved to its satisfaction that *torula* yeast in combination with other nutritional materials induces, at lower cost, more rapid growth of hatchery fish than anything else they have ever tried. They are now using the material as a standard ingredient in hatchery fish rearing.

Michigan State College tried *torula* in mink feeds for fur ranches as a substitute for horse meat and found that continuous feeding of *torula* improved the pelts and did not effect mutations. Since horse meat is scarce and threatens to practically disappear in a few years this discovery is important to fur farmers as well as sulfite manufacturers.

One amusing incident in these feeding experiments was with a lion cub in the Fort Worth, Texas zoo. A nutritionist put this cub on a diet of pet food heavily loaded with *torula* yeast when the cub's mother disowned it. The cub grew so healthy on this compound that the zoo has kept right on feeding it this special feed, which was made up by a South Bend, Ind. manufacturer of pet foods who uses *torula* in his regular formula. Now the cub is a big strong lioness, probably the only full-grown vegetarian lioness on earth.

Many other assorted uses have been found. It is possible to treat *torula* so that it makes an excellent beef flavored boullion. It has been used in gravy fortifiers, baby foods, and other nutritional products.

Components extracted from *torula* yeast offer other possiblities. It is a promising source of ergosterol, the raw material for making cortisone to treat arthritis. Cortisone apparently has many other medicinal uses. Other pharmaceutical compounds contained in the *torula* yeast cell have created considerable interest. Problems of separation and isolation continue to exist, so research goes on to find a way. The *torula* yeast field contains infinite other potentialities, and we may be sure that time and research will bring them out.

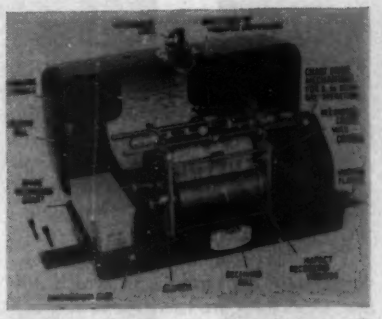
Lignin products

Lignins have stubbornly resisted researchers, but everyone who works with them feels sure that eventually they will yield tremendous values — perhaps in a class with coal tar and petroleum as raw materials for chemistry. This, however, is still in the realm of faith.

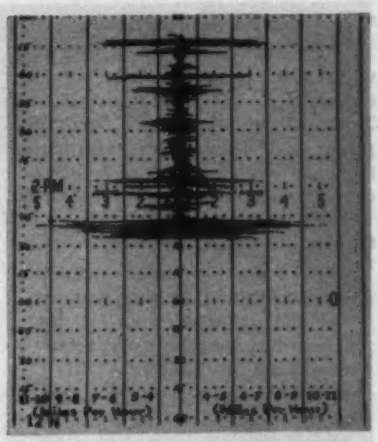
One Wisconsin sulfite manufacturer is spending $100,000 a year on lignin and related research — and has been at it on a comparable scale for two decades. The most spectacular product resulting from these lignin studies is vanillin, synthetic vanilla, which flavors practically all commercial food products. This company's process now yields nearly 70 per cent of all U.S. vanillin, and other processors using spent sulfite liquor account for practically all the rest. Originally, vanillin was synthesized from mineral materials.

The research league has been studying the chemistry of vanillin and vanillin derivatives for many years at the Institute of Paper Chemistry in Appleton. Chemical derivatives of vanillin have shown many interesting possibilities. They have been used experimentally in suntan lotions, as fungicides, in food preservatives, and pharmaceuticals. Several extremely stubborn diseases have yielded to these compounds after resisting all other treatments. One vanillin derivative is currently being made and marketed by one of the best known pharmaceutical manufacturers.

Reducing shipping damage en route



Impact register that is saving shippers millions of dollars annually



Recording of rough treatment to a shipment of paper

JOHN LAMBERT

SHIPMENT OF PAPER PRODUCTS by all media has presented certain damage risks that represent a definite loss, a loss which must necessarily be absorbed by the shipper or carrier—or both.

In recent years, improvements in the techniques of boxing, packing, and preparing paper and paper products of all kinds for transit have tended to reduce such losses.

These losses, of course, are not only direct but are also accompanied by attendant losses, such as delay due to the loss, damage which may make replacement necessary, and the resultant ill will that the shipper may incur among his customers.

For years, technical study has been devoted to the causes for damage in the course of shipment—packing and handling. Ways of reducing these losses have been thoroughly investigated by such firms as Alton Box Board Co., Anglo-Canadian Pulp & Paper Mills Ltd., Canadian International Paper Co., Mac Sim Bar Paper Co., Union Bag & Paper Corp., Fraser Paper Ltd., West Tacoma Newsprint Co. and others. These companies have adopted the newest and most progressive techniques in studying the problem of damage to products *en route*—from the loading platform to the receiver's door—whether by air, rail or highway.

The Technical Planning Div. of the National Safe Transit Committee and various independent test laboratories have made careful studies of the subject. In wide use for such studies is an instrument known as the impact register.

How important is impact testing?

As time goes on, all branches and divisions of the paper products industry will hear and learn more about this device that is saving millions of dollars annually in rendering information that not only enables the shipper to radically reduce damage to merchandise in transit, but also provides evidence of carrier or handling carelessness on which claims may be based—and collected.

Manufacturers and carriers today realize that some action must be taken to stop the tremendous losses that are occurring because of loading damage.

Impact tests that have resulted in much improved packaging have been long and arduous and the data recorded of great value. The carriers are now profiting by the use of this register inasmuch as their interests in shipment protection are parallel to those of the shipper himself.

Description of the Instrument

The register is a small and sturdy instrument that, when secured longitudinally in a freight car, measures and records the severity of end impacts received by the car and the time at which they occurred. (The device is also used in the laboratory to test packaging, crating and merchandising on the Conbur and other testing machines.)

The portion of the instrument that is affected by longitudinal impacts consists of a weight mounted on two rods riding on rollers, the movement of which is restrained by precision-built springs on either side. The scale of each spring is 6.383 lb. per in. The maximum movement each way from the zero point is 2.13 in. The natural frequency for this system is about 6.5 cycles per sec. An initial tension of IG is provided by each spring to center the vibrator on the chart. The direct-recording stainless steel stylus is mounted in the center of the moving weight. The total vibrator weight is 1.5 lb. Longitudinal impacts are recorded from both sides of the center line in five zones, and the width of each zone after the first is 0.47 in. The register has a static calibration of 2G per zone.

The wax-coated charts are 5 in. wide and 61 ft. long. The standard chart speed is 1.5 in. per hour, or 3 ft. per day, so that one chart may be in use for 20 days. The chart moves at a rate of $\frac{1}{8}$ in. in 5 min., so that the time of an impact can be read almost to the minute, since the record lines are extremely fine. Charts for speeds of 1 in. per hour for use with 30-day clocks are also available. The time is printed on the chart. Numbers on the right hand side indicate the number of feet of chart remaining on the supply roller.

The chart is driven by a double-spring, jeweled, Seth Thomas movement clock with special features that enable the workings to withstand rough treatment under a wide variation of temperature and vibration.

There are also available 16-day and 30-day clock movements that can be installed in the eight-day clock housing. These movements make possible the use of the register for long-distance shipments or shipments requiring more than eight days without rewinding the clock.

The instrument casing is supplied with a hasp that may be secured with a standard railroad car seal. On the base of the case are three spring hinges that are to be opened and used to secure the register to the floor or side wall of the vehicle. This is done by driving double-headed nails through the holes in the hinges.

On the top of the case is installed a name plate on which is engraved the name of the owner and the destination to which it is to be returned.

What can be accomplished

There has been a tendency to look upon impact registers as merely trouble makers and disciplinary instruments. Nothing could be further from their proper use. They gather information that is absolutely essential if the conditions concerned are to be corrected.

There are two primary reasons for the use of impact registers:

(1) To develop proper methods of packing and loading that are not too expensive but at the same time adequate to withstand reasonable handling.

(2) To discover and reduce rough handling.

There are two ways to use impact registers:

(1) To protect a carload of freight; for this reason let it be known to the railroad crews that the car is equipped with a register.

(2) To improve handling and to discover typical or average handling; for this purpose make certain that the railroad crews do not know that the registers are being used.

There is no complete agreement as to what constitutes "rough handling." However, the general tendency is to consider impacts at less than 6 mph as reasonable, and that impacts at higher speeds are "rough handling" and should not occur.

The chart for this register is divided into five zones, of which the first 4½ zones are used for measuring impacts. The beginning of the third zone, indicating 6 mph, is considered the dividing line between "reasonable" and "rough" handling.

Records made on either standing or moving vehicle are proportional to the speed of the moving car at the moment of impact. The interpretations shown below are the result of a large number of actual railway tests.

Even when a light car is struck by a heavy one, the record made on the light car is close to actual impact speeds, so that a switching crew is not unjustly blamed even under extreme conditions. Of course, a defective draft gear will produce records indicating more than the actual speed, but the effect on the car is equivalent to an impact with good draft gears at the indicated speed. The records, on the average, are more likely to indicate less, rather than more, than actual speed.

Zone	Speed indicated	Static load to produce record shown at end of zone indicated
1 and first half of 2	Normal	—
Second half of 2	Borderline*	4G
First half of 3	6 mph	5G
Second half of 3	7 mph	6G
First half of 4	8 mph	7G
Second half of 4	9 mph	8G
First half of 5	10 mph	9G
Second half of 5	11 mph	10G

*(*Freight records extending nearly to the third zone are brought by some users to the attention of the crews for comment and further improvement; but "rough handling" is not usually considered as being indicated unless the record extends into the third zone.)*

Load-locking device eliminates damage to paper shipments

COUPLING THE UNIT-PACK system with an equally modern box car has brought to a complete halt the damage claims problems of J. W. Clement Co., one of the nation's leading printing houses.

More than 7000 box cars are now equipped with the Evans DF Loader, a load-locking, load-securing device. This has eliminated spending about $25 per car for special dunnage that had to be tailor-made for each load and then discarded at the end of the run. It has also resulted in savings of 2-3 hrs. in loading and unloading time. In addition, it has reduced car cleaning time, since there is no need for using nails to build bulkheading and bracing in car floors and walls. The problem of leaving undetected nails to rip into paper shipments has virtually been done away with.

The Clement company's shipments to Chicago must be kept to a meticulous schedule because of publishing deadlines. An average of 22 unit-pack pallets per car per day is being shipped out of the Buffalo, N. Y. plant. Most of them go in Evans DF Loader-equipped cars. Some shipments go to Philadelphia by truck, and still others travel west by conventional box cars. No DF Loader car-load is under 65,000 lb.; many are above that, depending on the precise weight of the palletized loads that make up a carload.

The DF Loader, one of the most modern and versatile "device cars" in use on American railroads today, was designed and is installed in existing or new box cars by Evans Products Co. of Plymouth, Mich. It consists of a series of parallel wall belt rails, perforated at 1-in. intervals, that are permanently welded to car posts along both inside walls of a box car. Into these wall belt rails are fitted wood and steel reinforced cross members. Each end of the cross members is equipped with a pair of spring-locking steel-fingered end fittings that lock securely into perforations of the wall belt rails.

Part of the regular equipment of each DF Loader-equipped car are a complement of deckboards and bulkheads, slatted wooden partitions that are car-width in length and about 48 in. high. The bulkheads are placed against a section of lading, then cross members are locked securely against the bulkheads, thus effectively locking that section of the load against shifting in transit or contact with any other part of the load. As many such load sections as are desirable can be built on the floor level of the car.

Some kinds of lading lend themselves to double-decking. In such cases, the cross members can be used as girders above the floor level portion of the load and the deckboards placed over them as flooring for the second tier load. That upper portion of the load can also be independently locked off in sections just as is the floor load.

Doorway members, also perforated at 1-in. intervals, bridge the doorway of the car so that a unitized, end-to-end load may be built if desirable. At the car's destination, doorway members are first removed to permit the center-car portion of the load to be taken out first.

Because of the comparative simplicity of the load, 22 pallets nicely fill a 50-ft. box car. The loading crew, using fork lift trucks that pause at the weigh-in scale only long enough to record the exact weight of each pallet, load from each end of the car toward the doorway. The last two palletized units have to be maneuvered into the car with care but when in place there is just enough room for two men to brace fore and aft sections of the load.

Fork lift truck moves 3100-lb. unit-pack pallet from storage area to loading dock

Each unit-pack pallet is weighed before being loaded into DF Loader-equipped car

Two big palletized packages fill box car width; minimum loads always exceed 65,000 lb.

Loading is built from each end toward doorway; here crew locks half-car load in place with bulkhead and cross member (bottom)

Clement loads 22 palletized unit-packs in each car; each of the 3100-lb. packs is put into and taken out of the car by fork truck; spare cross members and deckboards are stowed overhead out of the way

Doorway belt rail members in place, bulkheads locked by double cross members, the load is completed and ready to go; wall belt rails, into which end locking fittings of the DF cross members are spring-locked, can be seen on far wall

To buy a new machine or rebuild the old?

THE QUESTION OF WHETHER to buy a new machine or to rehabilitate the old was thoroughly discussed at the opening session of the TAPPI Engineering Division meeting in Philadelphia October 18-24.

The answer to this question, which has been a major cause of management headaches during recent years, is seldom clear-cut. It involves, in addition to the immediate practical and economical considerations, many intangible factors that can be evaluated largely through speculation and interpretation of trends and future requirements. A decisive factor in arriving at a decision may depend, among others, on such considerations as what constitutes repair expenditure and what must be classed as capital investment.

The solution, therefore, is dependent on conditions in each individual mill; and, while the approach to the problem and the handling of it have been expertly outlined, no cure has been advanced to alleviate management's headache posed by the final decision of the question, "whether to buy or to rebuild?"

John A. McPherson, Mosinee Paper Mills Co., and Harold G. Ingraham, Charles T. Main Inc., described how Mosinee completely removed an old machine and replaced it with a modern high-speed production unit.

To aid management in arriving at a decision, the sales department had to make a market analysis to provide estimates of the volume of marketable products. This was followed by an engineering survey, analysis, estimates of cost, and a report on the company project and economics of the added productive capacity.

The need for a complete engineering report and a digest report in insuring good management reception of any contemplated expansion project was emphasized by E. K. Murphy, Rayonier Inc. The management committee passing on expenditures, he explained, usually includes two types of individuals, (1) those interested in conclusions, costs, and earnings only; and (2) those who are interested in studying the logic back of these conclusions. The engineering report, prepared by the engineering staff, should include a statement of the problem, available and recommended solutions, engineering recommendations, cost estimates, and an economic picture. The digest report, prepared by the chief engineer, should briefly review the problem, the recommended solution, any technical risks involved, estimated costs and savings, and the economic justification for the project.

Simultaneous burning of the bark and coal

Harold Hansen, Champion Paper & Fibre Co., and L. P. Copian, Riley Stoker Co., described a spreader stoker-fired boiler of the two-drum, single-pass, baffleless design installed at the Champion Paper & Fibre mill at Canton, N. C. The unit has a water-cooled furnace, super-heater, heat-recovery equipment, and dust collector. It is rated at 200,000 lb. steam per hour at 425 psi and 750°F.

In this unit, designed to burn unhogged bark and coal in combination or alone, the bark is distributed in the furnace by pneumatic distributors and coal by mechanical feeders. There is no need for bark storage since the unhogged bark is fired directly as received from the drum barkers. Coal is used to supplement the bark and also to even out the steam flow.

Pros and *cons* of outdoor power stations, designed both for new plants and additions to existing ones, were presented by J. R. Chapman, Stone & Webster Engineering Corp.

Digester corrosion

L. A. de la Grange, West Virginia Pulp & Paper Co., presented a paper on the identification of surface conditions in digesters, and W. B. Parker, Hartford Steam Boiler Inspection & Insurance Co., reviewed the latest findings in digester corrosion causes.

Based on an investigation in the laboratory of a number of steel samples taken from digesters that were giving either good or poor service life, Mr. Parker concluded that

1. Steel chemistry does not appear to be a major factor influencing service life.

2. Steel types, i.e. rimmed or killed, do not seem to be the definite answer to long service life.

3. The high carbon-silicon steel does seem to have a greater tendency toward rapid corrosion.

4. The soundness of the steel may have a marked influence on the corrosion or erosion rate. This soundness may be affected by steel chemistry.

The chemistry of the cooking liquor, according to Mr. Parker, is the most important single cause of digester corrosion. And in this connection certain generalizations can be made, namely:

(1) Cooking liquors may vary in their inherent corrosiveness; (2) white liquor has much greater effect on corrosion rates than steel chemistry and types; (3) higher sodium sulfide content increases corrosion rates; (4) increased sulfate content reduces the rate of attack; (5) increased chloride content increases the rate of attack; (6) some other chemical compounds in the white liquor, not reported in the normal chemical analysis, have a great influence on corrosion rates; (7) air in the liquor increases corrosiveness.

Chip impingement on the digester wall during the chip filling operation results in the removal of any protective scale on the digester and may, therefore, be the cause of corrosion. Liquor circulation, if permitted to proceed according to a certain pattern, may cause corrosion in certain areas.

Digesters in locations exposed to drafts have been found to be more subject to corrosion. This is apparently due to the contraction and expansion brought about by temperature changes which tend to break away the protective scale on the digester surface.

The least investigated cause of corrosion is that brought about by galvanic action. While its magnitude has not been properly evaluated, it has been found that the film effect on the digester may be increased by cathodic treatment and that too high a cathodic current density destroys the film formed due to gas evolution.

A comparative analysis of digester corrosion measurements was given by H. O. Teeple, International Nickel Co., and N. Shoumatoff, West Virginia Pulp & Paper Co.

Selection of chipper drives

M. J. Osborne, Bowaters Southern Paper Corp., presented the findings of the Tappi Chipper Drive Sub-Committee, which has studied some 50 chipper installations to determine power requirements for chipping wood of various species.

There is little uniformity in chipping, chipper design, or motor drives, Mr. Osborne reported. Chippers with four to 12 knives are driven at 200-600 rpm to produce chips of from ½ to 1 in. in length from woods with a shear stress range of 690-2100 psi; and power requirements vary from 4.1-10.6 hp hours per cord.

(Turn to page 836)

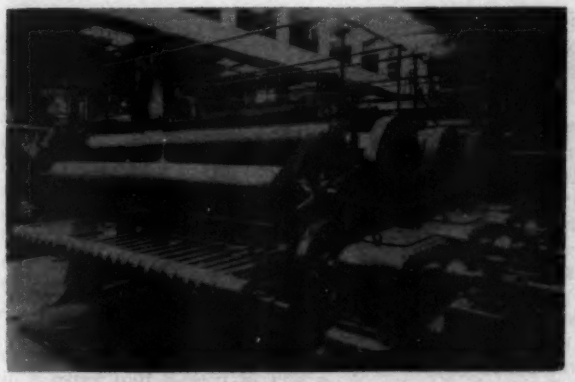


Fig. 1—Three variable speed drives are used on this paperboard cutter. Each drive consists of a P. I. V. variable speed unit, "RC" roller chain flexible coupling, an enclosed silent chain drive and a herringbone gear drive from the variable speed shaft to the cutter roll

Fig. 2—One of 24 silent chain beater drives in a pulp mill. All are still transmitting power efficiently after 12 years of continuous service

Mechanical power transmission in paper mills

FRANCIS A. WESTBROOK

THE DRIVES FOR paper mill machinery are often rather complicated in that they are made up of several parts, each of which must function properly if the drive as a whole is to be successful. In some instances the amount of power to be transmitted is large, the operating conditions as to moisture and humidity anything but ideal, and there are the usual service requirements resulting from the necessity of keeping all the machinery operating so that production all along the line will not suffer. For these reasons it is essential that all parts of every drive be properly selected, and this applies even to the minor items which play an inconspicuous role.

For example, Fig. 1 shows a paperboard cutter having three variable speed drives, and each of the latter consists of a roller chain flexible coupling, an enclosed roller chain, and a herringbone gear from the variable speed unit output shaft to the cutter roll. In addition to these, the shaft from the motor to the variable speed unit is supported by babbitted pillow blocks.

Chain drives

Silent chains and their applications in various fields have been thoroughly discussed in many articles. Therefore, a brief summary of their application will suffice here. They are made of leaf links with teeth designed to engage cut tooth wheels or sprockets in a manner comparable to the way a rack engages with a gear. They are flexible, quiet, positive in action, very durable, can be used for high or low speeds and to transmit large or small amounts of power. Fig. 2 shows one of 24 silent chain beater drives in a pulp mill which after 12 years of continuous service is still transmitting power efficiently.

Chain casings, seen in Fig. 1, are very important from the standpoint of safety, contamination of lubricant, and exclusion of dirt which might cause excessive wear. Exclusion of water which might reduce the effectiveness of the oil in some locations is equally important. Different types of casings are available for different conditions, and the best way to make a correct choice is to consult a reliable manufacturer.

Twist type roller chains are designed for use where the driving and driven shafts are not in parallel alignment by having a special bushing for the links which permits proper contact between the sprocket teeth under reasonable misalignment. The twist is absorbed by the two chain strands between the sprockets, so that when the links come into contact with the sprocket teeth they approximate the right angular position, and little, if any, adjustment takes place at the time of contact. Fig. 3 shows a twist type roller chain drive from a motor to a stock chest agitator.

Roller chain coupling

The roller chain flexible coupling seen in Fig. 1 is rugged and easy to install or remove without disturbing the shafts which it joins. They can handle considerable angular misalignment and up to 1/64-in. parallel misalignment without undue wear, and they are relatively inexpensive. For high speeds they are covered with plastic housings on account of their light weight and under ordinary conditions with a metal housing.

Roller chain couplings are made with two hardened tooth cut sprockets, one of which is attached to the driving shaft and the other to the driven shaft, and a roller chain. The rollers of the latter are in two separate halves, whereby separate contacts for each are obtained.

Roller bearing pillow blocks

In Fig. 4 is seen the drive for a 48-in. diameter reel at the wind-up end of a 110-in. fourdrinier paper machine. It consists of a worm gear reducer with twin disc coupling and roller bearing pillow block. The worm gear speed reducer lends itself very well to the right angle shaft arrangement which is necessary here, and its operation is quiet and effective.

Fig. 3—Twist type roller chain drive from a motor to a stock chest agitator

Fig. 4—This worm gear reducer is used on a drive to operate a 48-in. diameter reel at the wind-up end of a 111-in. fourdrinier paper machine. At the right is a Link-Belt series 900 roller bearing and twin disc clutch coupling

Fig. 5—Close-up view of a dryer roll section addition to a 126-in. paper machine.

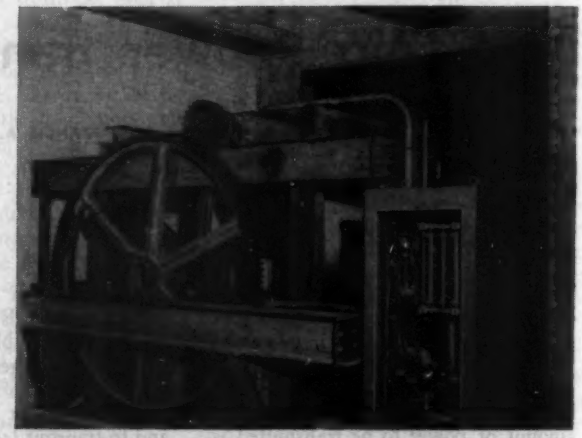


Fig. 6—The head end of a Link-Belt elevator lowerer used to handle rolls of newsprint. Stub shaft on each side with cast tooth sprocket for tray chain and cut tooth gear is supported by roller bearings

Fig. 7—Beater drive using Veelos link V-belt transmission (courtesy Manheim Mfg. & Belting Co.)

Fig. 8—Machinery used for unloading wood chips from railroad cars at a large paper mill in the Pacific Northwest. Several plows, permanently installed in each car, are pulled back and forth across the bottom of the cars by this mechanism that includes a Link-Belt herringbone reducer

A close-up view of a dryer roll addition to a 126-in. paper machine is shown in Fig. 5. As will be seen, the Lukenweld double jacketed dryer rolls are supported by roller bearing pillow blocks and the felt rolls by roller bearing flange units. All of these bearings are self-aligning to compensate for the misaligning of their supports or of the shafting. They are also sealed to retain the lubricant and to exclude dirt and water vapor, especially the latter.

The drive for an elevator lowerer used for handling rolls of newsprint in a paper mill is seen in Fig. 6. A shaft on top of the structure is driven by a 10-hp motor through a direct-coupled enclosed helical gear, and is equipped with a solenoid brake to prevent reversing of the elevator when stopped. At each end of this shaft there are pinions which engage with cut tooth gears on stub shafts on each side. Each stub shaft also has a cast tooth sprocket for the chains, to which the tray supporting the roll of newsprint is attached. Split housing roller bearing pillow blocks support these stub shafts. The pinion shaft is also supported by roller bearing pillow blocks with split housings, designed for severe, heavy-duty service calling for an adapter type bearing in which the adapter locks the bearing on the shafting. These bearings are double-row, self-aligning, and the split housings make for ease of installation and inspection.

Selection of sprocket wheel

Selection of the proper sprocket wheel for a given chain drive is important, and there are several types available to meet various conditions. For instance, the lighter weight arm wheels are desirable if the loads are not too heavy for their strength, otherwise solid plate center wheels should be used. Under certain conditions the weight of the latter may be decreased somewhat by bulls-eye holes in the web-center. Gray iron cast tooth wheels are suitable if the drive is free from exposure to abrasive dust, but if such is present the teeth should be Flint-Rim.

Another principle worth bearing in mind is that sprocket wheels with hubs on each side of the wheel lead to a more even distribution of the stress on the key and shaft, which may be of importance where the drive is heavy or subject to shocks.

Leather link V-belts

A leather link V-belt transmission for which several practical advantages are claimed is being used in paper mills as indicated in Fig. 7. Among the advantages are the fact that the links may be uncoupled from a reel of the belting and then be recoupled to make an endless belt of any desired length in a matter of minutes. For multiple V-drives it is simple to adjust the length of belt by adding or removing links so that each strand will carry its correct share of the load. These belts are also made with a water-resistant finish, at no extra cost, which is a distinct advantage in many paper mill applications.

In Fig. 8 is seen machinery for unloading wood chips from box cars at a large mill in the Pacific Northwest. Several plows are permanently installed in each car and they are drawn back and forth by the arrangement shown. The power transmission equipment includes a herringbone speed reducer, shafting supported by babbitted bearing pillow blocks, square jaw clutches, cable drums and sheaves.

Bearings of the anti-friction type are generally desirable, as on the dryer sections of paper machines. Since they provide for a starting torque which for all practical purposes is no greater than running torque, the excess of power required is mainly that of overcoming the inertia of the moving parts. This, combined with the lower friction, makes it possible to use smaller motors, less lubricant, and consequently have less maintenance.

Fire Protection

(continued from page 802)

semifinished, and finished paper, such areas must receive adequate protection. Materials should be stored in conformity with good practice with respect to maximum floor loadings, separation of piles, width of aisles, and height of piles. Automatic sprinklers are not needed in fire resistive buildings where pulp in storage contains more than 60 per cent moisture, but areas in which baled waste paper and jumbo rolls are stored require sprinklers. Hydrogen peroxide, sodium peroxide, sodium nitrate, and chlorine dioxide, all used in connection with bleaching operations, are not combustible, but can liberate oxygen when nearby combustibles catch fire.

Electronic safety devices should be provided in boiler rooms where powdered coal, oil, bark, hogged wood, and gas are employed, and the possibility of fire hazard in areas devoted to recovery of salts from black liquor should be considered. Coating and printing operations introduce risks because of starch dust and volatile solvents, but can be protected by vapor removal systems, sprinklers, control of humidity, and eliminators of static electricity.

In protecting pulpwood, current practice calls for high tumbled piles to be limited to 20,000 cords with heights not greater than 70 ft. and with 100-ft. aisles. When ranked storage is employed, a limit of 2500 cords per pile is advisable, as are 50-ft. aisles. In large size log yards fire hydrants should not be over 300 ft. apart and should be capable of delivering 3500 to 5000 gpm at 100 psi.

Trained personnel

All mills should have fire brigades manned by key men in each department, trained in the use of extinguishers, and led by full-time fire chiefs able to see that fire fighting equipment is kept in good order. Watchmen with a thorough knowledge of fire protection equipment should patrol the premises during inoperative periods.

Of 1854 fires in the pulp and paper industry, 45 per cent were caused by common hazards such as carelessness with matches and welding equipment, and the misuse of electricity; 37 per cent were traced to special hazards such as frictional sparks, ignition of wastes and dusts, overheated bearings; and 18 per cent were of unknown origin. Many fires can be prevented by orderly housekeeping, application of proper safeguards, adequate maintenance and inspection, and development of fire-consciousness among all employees.

U. S. Gypsum

(continued from page 801)

1. **Inspections**—Regular inspections of tools and equipment are made. Fire prevention equipment is given "the once over" at weekly intervals; and housekeeping tours are made to discover necessary plant clean-ups that might be conducive to safe conditions.

2. **First Aid**—A first aid room is provided with modern equipment and supplies. Sixteen Oakmont employees have been trained in first aid methods by instructors from the American Red Cross.

3. **Personal Protective Equipment**—Approximately 87 per cent of male employees at Oakmont wear safety shoes on the job every day; and other protective equipment is constantly in use.

Beyond all the physical means of promoting safety at Oakmont, however, is a never-ceasing vigilance and an ever-increasing search for new methods to keep the subject vital and alive.

It's not so easy to take it easy

DR. W. SCHWEISHEIMER

WHAT MAKES a "tired businessman" tired?

To find an answer to that clinical question more than 2000 "tired businessmen" were examined in the Benjamin Franklin Clinic of the Pennsylvania Hospital in Philadelphia.

Many patients came from industrial and business concerns whose owners wanted to take care of the health of the leading employees. One Philadelphia industrialist sent all 63 of his executives for a check-up. Fully 80 per cent of them needed medical, surgical, or psychiatric treatment.

The psychiatrist was needed in most cases to convince the executives they must slow down and stop worrying. Dr. L. W. Parkhurst, the clinic's medical director, emphasized that the executives "must be boss of their jobs, not slaves to those jobs."

To follow such advice means the difference between the healthy businessman and the one on the verge of an emotional or physical breakdown.

Why be tired?

The Benjamin Franklin Clinic states that a tired businessman gets that way because he:

1. stuffs his business troubles in his briefcase and carries them home at night instead of leaving them at the office;

2. goes out to lunch and does more talking than eating;

3. cannot take a real vacation because he cannot delegate authority; thinks he is indispensable;

4. does not have a day-in, day-out hobby but goes once a week for a strenuous physical workout to cure all his ills, and

5. does not know or practice moderation in either work or play.

The commonest physical ailments found among businessmen, the clinic reported, were: coronary artery disease; high blood pressure (hypertension), and ulcers of the stomach.

There are always people, tough supermen, who can stand the rush of modern business life without punishment. To the majority of both workers and executives it means physical harm and nervous trouble.

Frequently, there is nervous irritation which may be hidden for some time. Suddenly, however, it becomes obvious in unexpected contacts with other people. It means quibbling and quarreling over trifles. It means unnecessary friction.

Dr. Dershimer, Du Pont psychiatrist, says one of his biggest difficulties is getting supervisors to "come clean" with men whose work is below standard. He thinks supervisors should be frank with subordinates, tell them where they stand. Otherwise an employee doesn't know whether he is good or bad, needed or not, and thus builds up a sense of disinterest in his job.

Dr. Dershimer believes that this tendency is based more on the supervisor's desire to spare himself an unpleasant task than on his concern for his subordinate's feeling. Sometimes the productivity of a whole department will drop because the supervisor does not get along with its members. Treating his malady means relief to the whole department.

Take it easier

The Benjamin Franklin Clinic's prescription is: take it easier.

However, it is not so easy to take it easy. This is the result of studies by Prof. Josephine L. Rathbone of Teachers College, Columbia University. Most adults, she says, do not know how to relax. They are dissatisfied with their achievements and drive themselves to get more and more done each day. Suddenly, one day, they come down with ulcers, high blood pressure, or a physical breakdown.

Contrary to popular notion, Dr. Rathbone says, "tense" people do not always appear nervous. They usually don't bite their nails, crack their knuckles, or twist their handkerchief. Instead, they often appear very calm, because they restrain themselves. They try to keep themselves immobile because they fear they will reveal nervousness by moving. By holding themselves still, however, they are increasing their tensions.

A person who is overfatigued is likely to overwork, Dr. Rathbone points out. When a person is too tired, he seems to lose all sense of perspective and welcomes a breakdown as eagerly as a holiday. This overactivity takes on two particularly dangerous forms: (1) overaddiction to business, and (2) immersion in a social whirligig.

Undue strain and continuous nervous hurry are particularly harmful to the coronary arteries—those important blood vessels which bring food and energy to the heart muscle itself. Coronary disease can be limited in its effect by observance of a proper routine of living, eating and exercise, with some relaxation to break up the tension of the day.

Quite a few scientists believe that a kind of poisonous substance is being formed within the body during waking and working hours, and that this poison is gradually digested and eliminated during the hours of sleep. This may not be literally true, but sleep is the most important source of recovery and rejuvenation for everybody.

Take plenty of time . . .

Many "tired businessmen" either suffer from a form of insomnia or do not recognize the recuperative value of sleep. Some people think it is a waste to sleep, while others cannot slow down their pace, and their mind cannot rest sufficiently to fall asleep. Some hints to help induce sleep in such cases are given by Dr. Rathbone:

Prepare for sleep, she says, by cutting down the intensity of thinking for half an hour or more before retiring. A game of checkers or writing a pleasant letter sometimes help.

And then she gives rarely heard, but excellent advice: take plenty of time to get ready for bed. Nobody should expect to leave his work or a heated discussion in a state of exhilaration and, tearing off his clothes and bouncing to bed, fall immediately into deep slumber.

Instead, she says, take a leisurely bath, brush your teeth, comb your hair and prepare your clothes for the next morning. If you like to read in bed, choose nonfiction and a hard book. Bore your mind into unconditional surrender before trying to sleep. By getting into bed an hour before the usual time for retiring, she asserts, you will find yourself building up a reserve of rest and falling asleep without the old struggle.

PAPER SKETCHES

In 1953, **POWER-SAWS** figured in almost as many injuries as during the entire 10 preceding years!

—reported by the Ontario Pulp & Paper Makers' Safety Assn.

In a recent year, **45%** of the 1,854 fires in the pulp and paper industry were caused by common hazards (such as carelessness with matches, welding equipment, electricity, etc.) **37%** were caused by such special hazards as frictional sparks, ignition of wastes and dusts, overheated bearings; and **18%** were of unknown origin.

PULP and **PAPER** mills were first to install automatic sprinklers when these were first developed in 1875. To-day, sprinkler heads provide 20 to 30% more coverage than the older types.

Arthur Hoyt Scott trophy is awarded to Kimberly-Clark Corp., represented here by Konrad H. Tuchscherer, by C. L. Lyon of Scott Paper Co., donor of the prize

Julius A. Draper of Consolidated Paper Corp. Ltd. displays the Consolidated Shield, now held by the Wayagamack Div.

Safety a primary responsibility of management, Ross tells 42nd National Safety Congress

▶ U. S. Gypsum wins Edward Benton Fritz Memorial Trophy . . . Kimberly-Clark takes Arthur Hoyt Scott award . . . steady accident reduction lauded by delegates to Pulp and Paper Section

MODERN MANAGEMENT would be falling down in its responsibilities if it were to neglect the safety of its employees. Such responsibility goes beyond the individual worker. It includes stockholders, customers and the industrial community. For safe practices mean efficiency; and efficiency in turn promotes successful operation.

This was the view expressed by Arthur L. Ross as he addressed the Pulp and Paper Section at the 42nd National Safety Congress in Chicago October 18-22. Mr. Ross, who is vice president of the Southern Kraft Div. of International Paper Co., warned that in any modern plant safety problems must be as important as production problems.

Mr. Ross spoke at the gathering that saw the 1953 Edward Benton Fritz Memorial Trophy awarded to the Oakmont, Pa. plant of U. S. Gypsum Co. for the most outstanding record in the NSC pulp and paper safety contest.

Dallas Henry new chairman

Named chairman of the Pulp and Paper Section for the 1953-54 year was Dallas E. Henry, safety coordinator for Southern Advance Bag & Paper Co. at Hodge, La. He succeeds Arthur Carle, safety director for the

Arthur L. Ross
Keynote Speaker

Dallas E. Henry
1954-55 Chairman

Arthur Carle
Retiring Chairman

Northwest Paper Co., Cloquet, Minn.

Other principal officers elected to serve for the coming year include: *Vice Chairman and Program Chairman,* Francis H. Wagner, director of safety for the Mead Corp. in Chillicothe, Ohio; *News Letter Editor,* Fred O. Soughton, services and safety supervisor for LongLac Pulp & Paper Co. Ltd. at Terrace Bay, Ont., and *Secretary and Membership Chairman,* Earl F. Ripstra, personnel manager for Container Corp. of America in Chicago.

Accidents are not statistics

In his keynote address Mr. Ross pointed out that no enlightened management can neglect safety. Its importance to any firm, he said, stems from both the humanitarian approach and the monetary approach, for any customer evaluates a company on the basis of its efficiency and dependability. No manufacturing plant can achieve either of these without first realizing that the safety of its employees is of utmost importance.

Then, too, Mr. Ross continued, safe practices are a good basis for successful employer-employee relations. It is always easier to bargain with labor, he declared, if the plant involved has a good record of accident prevention —if it is known as "a safe place to work."

Moreover, accidents must not be statistics. They are certainly not statistics to the family of an injured worker. They are not statistics in the community. And neither should they be statistics to the company involved. The speaker declared that the supervisor reporting a mishap in his department should not deal with it merely as "just another statistic;" he should be made to present a personal report to his superior—an "on-the-carpet" report, treated just as importantly and just as seriously as a report on the reasons "why No. 3 machine is not making money."

Presentation of the Edward Benton Fritz Memorial Trophy is made to E. C. Beuthin of U. S. Gypsum Co. (l) by A. Scott Dowd, president of Fritz Publications Inc. Winner of the 1953 award was the Oakmont, Pa. operation with a frequency rate of 0.00 in 355,872 man-hours

Fritz Trophy to Oakmont

In winning the coveted Fritz Trophy, USG's Oakmont plant worked 355,872 man-hours in 1953 without a disabling injury and ranked first in Group D of the NSC pulp and paper safety contest.

The plaque was accepted for the Oakmont operation by E. C. Beuthin, manager of safety for the entire USG organization. He was formerly Oakmont works manager and as such had responsibility for that plant's safety program. Donor of the award is THE PAPER INDUSTRY, and A. Scott Dowd, president of Fritz Publications Inc., made the presentation.

In making the award, Mr. Dowd noted that the total man-hours worked at the mill since the last reportable injury through December 31, 1953—the end of the contest year—was 1,697,588. Moreover, on October 6, 1954, it had been six years since the last lost-time accident; and five days later on October 11 the record had

Congratulations are in order for the new chairman of the Pulp and Paper Section, Dallas E. Henry, (second from left). Others are (l to r) F. O. Soughton, news letter editor; Arthur Carle, retiring chairman, and Francis H. Wagner, vice chairman and program chairman

Head table principals at the annual luncheon at the Conrad Hilton were (l to r): Arthur Carle, Dallas E. Henry, Francis H. Wagner, Frank Pater (staff representative of the National Safety Council), and Earl F. Ripstra, new secretary and membership chairman

The Wrong Way to handle paper mill insurance problems was shown in the first scene of a skit, "Say it Isn't So." All participants were staff members of Employers Mutuals of Wausau. They are (l to r): George Williams, Gordon Lemke, Bill Berfield, and Otto Holmskog

Scene II of the playlet took place in the manager's office of a well-run mill. Demonstrated was the manner in which insurance matters should be handled. In the picture are (l to r) Mr. Williams, Bob Keefe, Mr. Lemke and Robert Whiteside

been extended to 2,000,000 safe man-hours.

Scott award to Kimberly-Clark

The first annual presentation of the Arthur Hoyt Scott Trophy was made by Claire L. Lyon, employee relations manager for Scott Paper Co. Scott is the donor of the award, which is to be given each year to that company whose operations *in all its plants combined* result in the best safety record during the contest period.

As the first recipient of the trophy, Kimberly-Clark worked a total of 15,679,785 man-hours in seven company units for a frequency rate of 2.93, down 33.71 per cent from its 1952 rate of 4.42. K-C's total man-hours worked since the last reportable injury through December 31, 1953, was 658,902.

Largest plant in the Kimberly-Clark operation is the mill at Neenah, Wis., with 1915 employees; others in order are as follows: Niagara Falls, N. Y., 1755; Kimberly, Wis., 1429; Memphis, Tenn., 1245; Niagara, Wis., 904, and Appleton, Wis., 62. The Field Service Div., with headquarters at Neenah, has a staff of 183. (The latter organization serves all plants of the company as a mechanical trade shop and crew of maintenance and erection personnel.)

In an informal award presentation, it was announced by Julius A. Draper that the Wayagamack Div. of Consolidated Paper Corp. Ltd. at Three Rivers, Que., is now the holder of the Consolidated Shield.

Mr. Draper, who is safety director for the entire Consolidated firm, explained that the Shield was donated recently by Consolidated to be awarded to the North American newsprint mill that can boast the best safety record. For many years the record was held by St. Croix Paper Co. in Woodland, Maine, for 3,061,526 safe man-hours. The record was made in 1935 and was recognized by the NSC as the world's record.

However, on May 6, 1953, the Wayagamack Div. completed 3,197,801 man-hours without a lost-time injury to take possession of the Shield. In competition recognized by the NSC, that division will keep the award until a new record is made.

Growth in safety consciousness

Reviewing briefly the 1953 contest year, Mr. Dowd, who is chairman of the section's contest committee, reported that, "In general, the accident record for all companies reporting their experiences to the National Safety Council during the period 1923 to 1953 reached in 1953 the lowest frequency rate reported in those 31 years —9.54. The cumulative rate for all *constestants in the* 1953 *contest* was 8.44.

Special feature of the 1954 Congress was a joint meeting with the Wood Products Section. Here, Douglas B. Chant addresses the group, seated is the chairman, R. M. Gilmore

"A total of 256 contestants—or 58 per cent—had frequency rates below 10," Mr. Dowd continued, "while 39 units—consisting of 25 mills and 14 manufacturing plants—completed the contest with perfect scores.

"There were 113 contestants aside from the group winners that had frequency rates of less than their group average and who also showed reductions by comparison with the rates made in the previous contest.

"Further evidence of growth in the safety consciousness of our industry is shown in the record of 1953—17 units were given the coveted Award of Honor by the National Safety Council for perfect records of 3,000,000 or more man-hours. Two such awards have already been made this year," Mr. Dowd concluded.

The three big needs

In a feature new to the National Safety Congress, the Pulp and Paper Section met in a joint meeting with the Wood Products Section. Theme of the gathering was safety in the woods. Robert M. Gilmore, general safety supervisor for Rayonier Inc. at Hoquiam, Wash., presided.

In his opening remarks, Mr. Gilmore declared that in perhaps no other field is the opportunity for safety improvement as great as it is in the logging and wood products industries. There are, he said, "three big needs" for those industries:

(1) A changed attitude toward safety with no place for fatalism; (2) more support and interest on the part of labor, and (3) more effectiveness on the part of safety specialists.

Following Mr. Gilmore's talk, Douglas B. Chant showed films on

Even the most specialized exchangers and condensers

get a head start here!

On the assembly floors of the Kewanee-Ross plants in Buffalo, N. Y. and Kewanee, Ill., are Ross Exchangers and Surface Condensers of numerous designs.

Some are completely standardized . . . some partly standardized . . . others completely special.

But *all* have a big point in common: *They were off to a head start from the time Ross engineers were first consulted.*

Unsurpassed experience with a tremendous variety of both standard and special designs is usually able to produce successful precedents for most requirements. Often, for even the most specialized needs, standard components in a wide range of working pressures can be utilized at tremendous savings in cost and time . . . flanges, shell and floating head covers, tube sheets, tube layouts, shells, channels, for example. And from the all-important standpoint of fabricating facilities, the two, large, modern plants of Kewanee-Ross are equipped with the latest machines and tools to do the job better and faster.

Before you form your own opinion on how complex or specialized your condenser or exchanger has to be to meet your requirements, consult with a Kewanee-Ross engineering representative. A short talk can well result in many shortcuts to a satisfactory solution.

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Sulfate Pulp Manufacturing Round Table is led by D. V. Hill (l); N. C. Bellamy Jr. is the recorder

Fred T. Morrish (r) is in charge of the Sulfite Pulp session; Howard J. Kroll is the recorder

Folding Paper Box meeting. In charge is A. O. Vranek (r) with the help of Ray Ketchmark

Paper Converting session is led by R. G. Belknap (l); taking notes is Harold Hewitt

Julius A. Draper addresses the Paper Manufacturing meeting; C. R. Johnston (l) is in charge

Insulation and Roofing session is presided over by Amos Keen (r); C. L. Eddins is recorder

safe woods practices. The films were produced by the Ontario Pulp & Paper Makers' Safety Association, of which Mr. Chant is secretary-engineer.

A demonstration of chain saw safety was presented by Harry H. Jefferson, safety and training officer for the American Pulpwood Association. Another film, depicting the hazards of the log haul, was shown by E. H. Reeves, general manager of Lumberman's Safety Association, Toronto.

The program closed with a panel discussion on the topic, "Prevention of Slipping and Falling Accidents." Participants included Mr. Gilmore; Roy E. Evans, safety supervisor for British Columbia Forest Products Ltd., and A. P. McIntosh, chief of the department of industrial safety in the Florida State Industrial Commission.

Lampooning the problem

The contrast between the right and wrong approaches to the paper mill insurance problem was humorously presented in a skit, "Say It Isn't So." The dramatic bit was prepared and produced by members of the Pulp and Paper Section. Participants, all staff members of Employers Mutuals of Wausau, included: Gordon Lemke, research engineer; Bill Berfield; Otto Holmskog, supervising construction engineer; Robert Whiteside, safety engineer, and George Williams, safety engineer.

On two afternoons five round table discussions and a symposium were staged to bring to the delegates the latest in safety procedures and methods. Various paper mill and converting problems were stated and discussed. The subjects were Sulfite Pulp Manufacturing, Sulfate Pulp Manufacturing, Paper Converting, Insulation and Roofing Products, and the Folding Paper Box.

The Paper Manufacturing session featured a symposium, "Controlling the Paper Machine Operation." Presiding was C. R. Johnston, safety director for Cornell Paperboard Products Co. of Cornell, Wis.

Those taking part in the discussion were T. A. Moore of Liberty Mutual Insurance Co., whose subject was "Guarding the Nip;" Julius A. Draper of Consolidated Paper Corp. Ltd., "Injury-Free Winder Operation;" A. E. Minor of Ontario-Minnesota Pulp & Paper Co. Ltd., "Preventing Slips and Falls," and W. J. Miles of National Container Corp., "Safety in Maintenance."

1954-55 executive committee

The structure of the 1954-55 Pulp and Paper Section executive committee, in addition to the officers listed above, is as follows:

Regional Membership Representatives

Great Lakes: Arthur Carle, safety director for the Northwest Paper Co., Cloquet, Minn.; East: H. P. Heubner, insurance manager for the Flintkote Co., New York, N. Y.; South: C. C. MacPike, safety director for St. Regis Paper Co., Pensacola, Fla.; Canada: Douglas B. Chant, secretary-engineer for the Ontario Pulp & Paper Makers' Safety Association, Toronto, and West: Robert M. Gilmore, general safety supervisor for Rayonier Inc. at Hoquiam, Wash.

Medical Advisor

Dr. James D. Stark, medical director for Hammermill Paper Co., Erie, Pa.

Special Projects Committee

Gordon Lemke, research engineer for Employers Mutual Liability Insurance Co., Wausau, Wis. (chairman); Lambert Louy, safety director for Container Corp. of America, Chicago; George R. Merriman, coordinator of personnel and safety for International Paper Co., Mobile, Ala.; W. H. McLaughlin, director of safety and sanitation for Lily-Tulip Cup Corp., College Point, Long Island, N. Y., and A. E. Minor, safety supervisor for the Ontario-Minnesota Pulp & Paper Co. Ltd., Kenora, Ont.

Contest Committee

A. Scott Dowd, president of Fritz Publications Inc., Chicago (chairman); J. Fred Berry, general insurance manager for Alton Box Board Co., Alton, Ill.; Harley B. Goodrich, maintenance engineer for Strathmore Paper Co., West Springfield, Mass., and James M. Conaway, safety manager for Scott Paper Co., Chester, Pa.

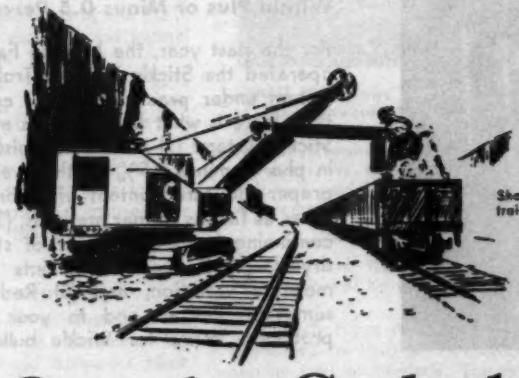
Pulpwood Logging Division

Division Chairman: B. H. Roy, supervisor of health and safety (woodlands) for Spruce Falls Power & Paper Co. Ltd., Kapuskasing, Ont.

Publications Committee: Russell C. Hammond, safety engineer for Employers Mutual Liability Insurance Co. of Wisconsin, Duluth, Minn. (chairman); Harry H. Jefferson, safety and training officer for the American Pulpwood Association, New York, N. Y.; Leo St. Denis,

(Turn to page 850)

On page 800 is an article dealing with the safety program at the U. S. Gypsum plant in Oakmont, Pa., winner of the 1953 Edward Benton Fritz Memorial Trophy.



Shovel-loading train of gondolas.

Crude Sulphur

for Industrial Use

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Producing Units

- **NEWGULF, TEXAS**
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- **SPINDLETOP, TEXAS**
- **WORLAND, WYOMING**

STICKLE NEWS

Stickle Equipment
Cuts the cost of steam

Published by Stickle Steam Specialties Co., 2215 Valley Ave., Indianapolis 18, Indiana

Newton Falls Paper Mill Reports on Stickle Moisture Control System

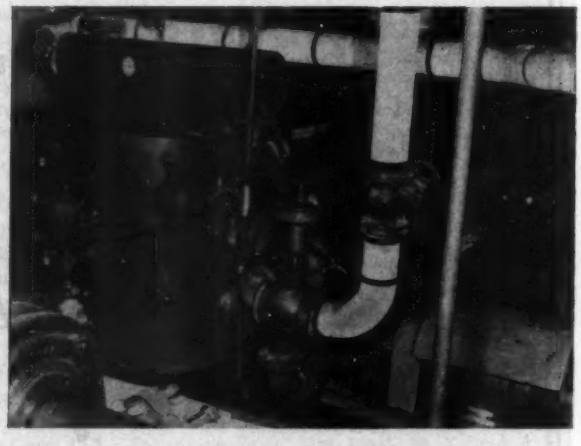
Automatically Maintains Moisture Content Within Plus or Minus 0.5 Percent

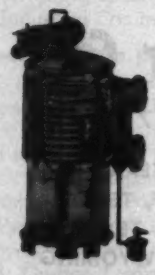
For the past year, the Newton Falls Paper Mill has operated the Stickle Pres-Ten-Trol moisture control system under practically every conceivable condition. Here is what Newton Falls men say about the Stickle system: (1) Maintains moisture content within plus or minus 0.5% on the average, (2) Restores proper moisture content after breaks up to eight times as fast as former methods, (3) Eliminates time-consuming hand adjustment of steam flow to the dryers, (4) Reduces complaints of customers on moisture variation, and (5) Reduces steam consumption. Put an end to your moisture control problems. Write for Stickle bulletin 360-C.

Drainage System Guaranteed to Increase Production, Lower Fuel Costs

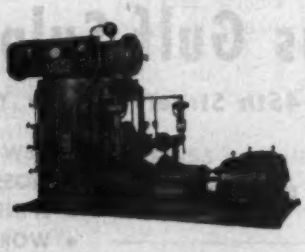
Mills Report Dryer Capacity Up 20 to 30%; Fuel Costs Down 10 to 15%

Mill after mill reports higher production and lower fuel costs after installing the Stickle Vacuum Differential Drainage System. Here is an example in one mill, the No. 4 machine was running at 590 to 600 f.p.m. at a drying pressure of 12 to 15 pounds. Attempts at higher speeds resulted in cockled paper and by-passed steam traps. After installation of the Stickle system, speed was increased to 750 to 800 f.p.m., at a drying pressure of 8 to 10 pounds — with no cockling and no traps by-passed. Main unit of the drainage system is the vacuum pump shown at right. Send for free bulletin 260. For paper board mills, the Stickle Differential Drainage and Boiler Return System (Bulletin 160) is recommended.



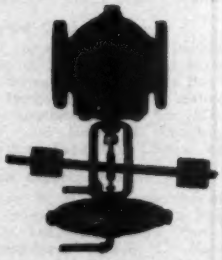


"X-Ray" view of the Stickle Open Coil Deaerating Feed Water Heater . . . guaranteed to heat more water to higher temperature in less space than any other heater at any price. Capacities: 3,000 to 300,000 pounds per hour.



The Stickle Vacuum Pump is main unit of the Vacuum Differential Drainage System. Single and duplex models. Capacities up to 300 GPM (water) and 290 CFM (air); or 900 GPM (water only).

Stickle Visible Micro Adjustable Orifice permits accurate modulated temperature control on dryers with visible operation. Eliminates steam losses due to excessive "blowing through" into return lines.



Stickle Automatic Differential Valve controls exact differentials in pressure between two sections of paper machine, assuring proper drainage at all pressures.

ALLIED NEWS

Black-Clawson Forms Canadian Subsidiary

The Black-Clawson Co. has announced the formation of a Canadian subsidiary, Black-Clawson (Canada) Ltd. with offices in Montreal. President of the subsidiary is Cliff R. Crawford, president of the U. S. firm, while the vice president and general manager is Edward M. Root.

The new company will function as a sales and engineering organization to provide a complete line of Canadian-built B-C paper machinery.

Mr. Root, with 24 years' experience in the pulp and paper industry, was for the past four years southern sales manager for Black-Clawson with headquarters in Atlanta.

Fleck agreement ends

B-C has announced the termination of the sales and manufacturing agreement between Black-Clawson and Alexander Fleck Ltd. of Ottawa, Ont.

The two firms had been associated since 1940, following the merger of B-C and Dilts Machine Works of Fulton, N. Y. During the period of the association Fleck manufactured and sold Black-Clawson machinery and equipment in Canada in addition to its other lines of pulp and paper equipment.

Albany Felt of Canada Makes Patent Available

Canadian felt manufacturers have been offered licenses to produce synthetic-content paper machine felts as covered by the patent granted to Albany Felt Co. of Canada Ltd. on March 30. A nominal charge of $1 per license will be made.

The application for this patent was made originally in 1947, five years prior to the opening of the Albany plant in Cowansville, Que. During that period other Canadian felt manufacturers started to make felts with synthetic yarns, most of which are covered by the recently granted Albany patent. The Canadian patent No. 501062 is identical to that granted in the U. S. in 1947. The patents cover the use of nylon in papermakers felts in percentages of 5 to 70.

Downingtown Acquires West Coast Subsidiary

Downingtown Mfg. Co. of Downingtown, Pa., has announced its acquisition of the assets of Monarch Forge & Machine Works of Portland, Ore. The Pennsylvania firm will operate the company as Monarch Forge & Machine Works Inc., a wholly owned subsidiary.

U. Grant LeFevre has been named vice president and treasurer, and Francis J. Fitzpatrick will be vice president and sales manager.

Monarch Forge & Machine Works was established in 1910 at Vancouver, Wash., moving later to Portland. The firm manufactures a complete line of sawmill machinery, does general job machining and designs and manufactures special machinery for numerous other industries.

GIANT 292-in. wire cloth loom now weaving at the Eastwood-Nealley Corp. plant in Belleville, N.J., is the largest in the United States. According to the firm, the loom represents the latest design, and its controls have made fourdrinier wire production as automatic as possible

E. D. Jones and Fleck Announce Agreement

E. D. Jones & Sons Co. of Pittsfield, Mass., and Alexander Fleck Ltd. of Ottawa, Ont., have announced that arrangements have been completed for a two-way manufacturing and sales agreement.

The association means that Fleck will manufacture and/or sell E. D. Jones equipment in Canada, while E. D. Jones will manufacture and/or sell the Fleck line in the United States. Arrangements have been made for the complete liaison between the two firms.

UPON ACQUISITION of Bagley & Sawall Co., the Black-Clawson Co. has entered into an agreement with F. W. Roberts Mfg. Co. Inc. for the manufacture and sale of the patented continuous Roberts grinder. Manufacturing, sales and service of the ring-type pulpwood grinder in the United States has been assigned to the Shartle Bros. Machine Div. at Middletown, Ohio

Allied News Notes

Aco Machinery Corp. is a new Watertown, N. Y. firm headed by Abe Cooper, former president of Bagley & Sewall Co. The company will buy, rebuild and sell used papermaking equipment and machinery. (Bagley & Sewall was recently purchased by the Black-Clawson Co.)

The Manhattan Rubber Div. of Raybestos-Manhattan Inc. has named Howell-Lanier Engineering Sales as metropolitan Baltimore distributors.

In a joint statement, National Starch Products Inc. and Clinton Foods Inc. have confirmed that discussions are taking place looking to a merger of the two firms.

Heyden Chemical Corp. has entered into a contract to acquire all the outstanding common stock of Nuodex Products Co. of Elizabeth, N. J. The latter firm manufactures chemical additives.

American Chain & Cable Co. of Bridgeport, Conn., has purchased the Bristol Co. The management, personnel and policies of Bristol, maker of automatic controls, will continue in effect.

Michael Pope, consulting engineer in the field of industrial steam and power, has opened offices at 101 Park Ave., New York, N. Y. He was formerly associated with the late David Moffat Myers.

The West Coast operations of Quaker Rubber Corp. and its recent acquisition, Pioneer Rubber Mills of Pittsburg, Cal., have been merged as Quaker Pioneer Rubber Mills, a division of H. K. Porter Co. Inc.

The Scientific Apparatus Makers Association has announced that a quality control and research laboratory for the smaller processor and manufacturer can be established and proven highly successful on an investment of less than $5000.

The Industrial Truck Div. of Clark Equipment Co. has named Morgan's Inc. of Savannah, Ga., as sales and service representative for its line of fork trucks, straddle carriers and other materials handling equipment.

Red-Ray Mfg. Co. Inc. has moved to new factory and office quarters at Cliffside Park, N. J.

Hobbs Mfg. Co. of Worcester, Mass., will be represented in 11 southern states by Parrott & Ballentine of Greenville, S. C., and Greensboro, N. C. Hobbs

manufactures the controlled-tension Alquist winder.

Ebasco Services Inc. has opened an office in Portland, Ore. William F. Rooney will be in charge.

Appleton Wire Works of Appleton, Wis., and the American Wire Weavers' Protective Association have solved differences over the firm's experimental plant at Montgomery, Ala., and have agreed to a new two-year industry-wide union contract applying to Appleton workers.

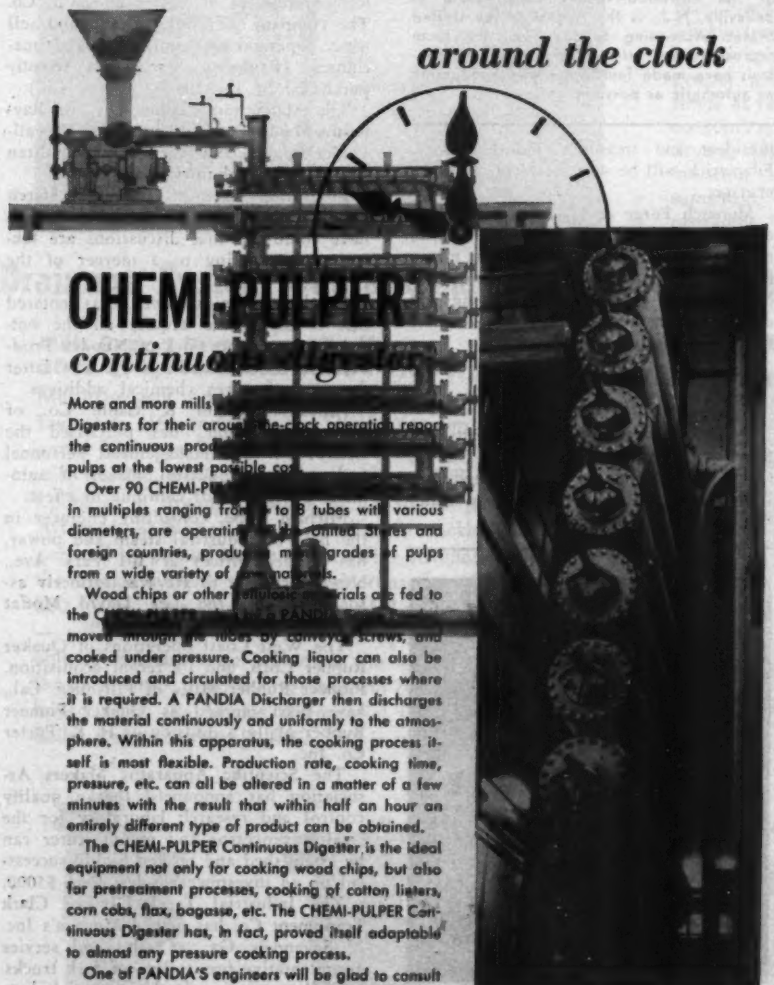
Union Bay State Chemical Co. Inc. of Cambridge, Mass., has opened a development laboratory, sales office and warehouse at Greenville, S. C.

Lukens Steel Co. has denied active rumors in financial circles that it is considering a merger with a large company in the steel—or any other—industry.

Allied News . . .

An affiliation of **Panellit Inc.**, Skokie, Ill. manufacturer of process control, data-reduction and information systems, and **Taller & Cooper Inc.** of Brooklyn, N. Y., has been announced. The new Tal-Cooper Div. of Panellit will handle marketing and application engineering of T&C products used in the data-reduction field.

C. C. McMillan Industrial Supplies is a newly formed company in Portland, Ore., for the manufacture of Kemaloid, a recently developed treatment for the removal and prevention of scale, corrosion, oil deposits, foaming and priming, and embrittlement tendencies in boilers and cooling water systems. The product is manufactured from Douglas fir waste.



around the clock

CHEMI-PULPER

continuous digester

More and more mills [illegible] Digesters for their around-the-clock operation report the continuous prod[illegible] pulps at the lowest possible cos[illegible]

Over 90 CHEMI-PU[illegible] in multiples ranging fro[illegible] to 3 tubes with various diameters, are operating [illegible] United States and foreign countries, produc[illegible] many grades of pulps from a wide variety of raw materials.

Wood chips or other cellulosic materials are fed to the CHEMI-PULPER by a PANDIA [illegible] moved through the tubes by conveyor screws, and cooked under pressure. Cooking liquor can also be introduced and circulated for those processes where it is required. A PANDIA Discharger then discharges the material continuously and uniformly to the atmosphere. Within this apparatus, the cooking process itself is most flexible. Production rate, cooking time, pressure, etc. can all be altered in a matter of a few minutes with the result that within half an hour an entirely different type of product can be obtained.

The CHEMI-PULPER Continuous Digester is the ideal equipment not only for cooking wood chips, but also for pretreatment processes, cooking of cotton linters, corn cobs, flax, bagasse, etc. The CHEMI-PULPER Continuous Digester has, in fact, proved itself adaptable to almost any pressure cooking process.

One of PANDIA'S engineers will be glad to consult with you concerning your continuous processing requirements.

Write for Bulletin C3.

Manufactured and Sold in Canada by THE ALEXANDER FLECK LIMITED, OTTAWA, CANADA

PANDIA

PANDIA INC.

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Allied Personalities

Hugh C. Osborn of Portland, Ore., has joined the sales staff of Lockport Felt Co. Mr. Osborn, who was formerly with General Dyestuff Corp., will cover Pacific Coast mills that were served by the late Alan C. Dunham.

H. C. Osborn

G. E. Emigh

G. Elmer Emigh of South Gate, Cal., has joined the sales staff of Sandy Hill Iron & Brass Works. A veteran of paper mill experience, he will represent Sandy Hill in the sale of its complete line of pulp and papermaking machinery. Mr. Emigh will work in conjunction with an arrangement of long standing with A. H. Lundberg of Seattle, who represents both Sandy Hill and Kamyr Inc.

James R. Wellman has been named director of American Cyanamid Co.'s new paper chemicals application laboratory in Chicago. At one time chief chemist for Port Huron Sulphite & Paper Co., Mr. Wellman has been technical service representative in the Midwest for the American Cyanamid Paper Chemicals Department.

W. Malcolm Orchard has joined the staff of Downingtown Mfg. Co. as a sales engineer. He has a background of paper mill experience with such firms as Ontario Paper Co. Ltd. and St. Croix Paper Co.

Joseph P. Madden has joined Antara Chemicals, a sales division of General Aniline & Film Corp., as manager of inorganic chemicals. He was formerly vice president of Caldwell Chemical Co.

Peter Gasperini, formerly with Vanton Pump & Equipment Corp., has been named to the sales department of Cooper Alloy Corp.'s Valve & Fitting Div.

Warren B. Thompson, at one time with E. I. du Pont de Nemours & Co., has become associated with Rhodia Inc. as sales representative for the Industrial Reodorant ("Alamask") Div.

C. D. Ridgeway, who has been with the firm since 1934, has been named manager of the Dallas office of Corn Products Sales Co.

William F. George has retired as New York district sales manager for Hooker Electrochemical Co. He is being succeeded by **Harris C. Miller,** formerly assistant New York sales manager.

Lester D. Borden has been named manager of the Philadelphia branch office of A. E. Staley Mfg. Co. to succeed Harry J. Reavis, who is on a leave of absence for health reasons. Mr. Borden was formerly in the Buffalo, N. Y. territory.

NAMES in the NEWS

North Western Pulp & Power Elects Officers

Directors of North Western Pulp & Power Ltd. have elected a new slate of officers as a further corporate step in connection with the financing and construction of a 300-ton bleached kraft pulp mill at Edson, Alberta. North Western is jointly owned by St. Regis Paper Co. and North Canadian Oils Ltd.

Newly elected officers are as follows: Frank E. Ruben, chairman of the board; Roy K. Ferguson, president; Edward R. Gay, executive vice president; William R. Adams, vice president; Arch Carswell, vice president; W. H. Versfelt, treasurer, and Willard J. Dixon, secretary.

Members of the board of directors are Messrs. Ferguson, Gay, Versfelt, Adams and Carswell, all of St. Regis; and Frank E. Ruben, Robert Ruben, Hugh Griffith and Gordon H. Allen.

Geo. D. Bearce

F. C. Goodwill

Bearce Retires as St. Regis Mill Manager

St. Regis Paper Co. has announced the retirement of George D. Bearce as resident manager of its Bucksport, Maine mill. He has established an office in Bucksport, where he is engaged in consultation work in the pulp and paper field.

Succeeding Mr. Bearce at the mill is Frederic C. Goodwill, who has been assistant to William R. Adams, vice president in charge of manufacturing.

A graduate of the University of Maine, Mr. Bearce has spent more than 40 years in the paper industry. He was vice president and general manager of Maine Seaboard Paper Co. in Bucksport until it was acquired by Time Inc. in 1945 and continued in that position through 1946, when the mill was taken over by St. Regis.

THE SWEARING in of Russell C. Flom of Marathon Corp. as director of the Forest Products Division of the Business and Defense Services Administration, U. S. Department of Commerce. The man on the left is Charles F. Honeywell, administrator of B&DSA

Flom in Government Post

Russell C. Flom of Menasha, Wis., has been appointed director of the Forest Products Division of the Business and Defense Services Administration in the United States Department of Commerce.

Mr. Flom is on leave from his position as director of sales for Marathon Corp. He succeeds Bernard L. Orell of St. Paul, Minn., vice president of Weyerhaeuser Sales Co.

In another B&DSA appointment, Maurice (Jack) London of Forest Hills, N. Y., was named consultant to the pulp, paper and paperboard section of the Forest Products Division. A veteran of 40 years in the industry, Mr. London is vice president of Hudson Pulp & Paper Co.

Mr. Goodwill joined St. Regis in 1928 as a chemist at Deferiet, N. Y. He later served as chief chemist and technical director of the groundwood paper division. From 1948 to August of 1953 he was resident manager at Kalamazoo, Mich. In 1953 he was named assistant to Mr. Adams.

Industry Represented on U. S. Chamber Committees

The pulp and paper industry has representatives in the membership of two committees recently announced by the Chamber of Commerce of the United States.

Serving on the Manufacture Committee for 1954-1955 are Melvin H. Baker, chairman of the board of National Gypsum Co.; Lawson Turcotte, president of Puget Sound Pulp & Timber Co.; L. F. Whittemore, president of the Brown Co., and Harold L. Zellerbach, executive vice president of Crown Zellerbach Corp.

D. H. Swenson, assistant controller of Weyerhaeuser Timber Co., has been named to the Committee on Taxation.

Scott Makes West Coast Realignment

A realignment of staff functions has been announced by the West Coast Div. of Scott Paper Co. U. M. Dickey, a member of the board of directors, continues as senior vice president for the West Coast.

Leo S. Burdon, assistant vice president, will devote more time to long-range planning and to projects connected with the three West Coast mills.

All pulp and paper production, and certain supporting departments at Everett, Wash., will henceforth be the responsibility of three staff assistants to Paul C. Baldwin, vice president.

N. William Coster, as pulp mill manager, will have the responsibility for the expanded pulp and wood preparation for the yard crews. Loren V. Forman, as technical assistant, will add to his responsibilities the over-all direction of paper mill operations and

N. W. Coster (above l.)

L. V. Forman (above r.)

C. D. Dickey Jr. (right)

G&K Leather Belting grips the pulleys for more production-power

It Grips — Like an elephant's trunk, leather's resilient, frictional surface firmly *grips* the pulley face, causing belt and pulley to move as one power unit.

It Pulls — Leather is strong, flexible, with controlled stretch — gives peak performance on *any* drive.

It's 3-Dimensional — Leather's millions of fibres are interlaced to form the tough *three-dimensional* structure so necessary for PULLINGRIP — *developed to the highest degree in G&K Leather Belting.*

Call your G&K Industrial Supplies Distributor for flat, round, link and V-belting, belt lacing, dressings, cements, packings and specialty leathers. Write for free Belting Catalog 101.

B-2

GRATON AND KNIGHT

Memo: **Paper Mill Superintendents**

Here's a drive you can depend on — if the belting is G&K leather. Every drive in the mill — from beaters to take-off reels — must keep pulling at top efficiency with minimum stretch. That's why superintendents specify G&K RESEARCH® brand for top tonnage output.

GRATON & KNIGHT Company

WORCESTER, MASSACHUSETTS

Names in the News . . .

of the engineering and maintenance departments. Charles D. Dickey Jr. becomes administrative assistant and will assume general direction of the accounting, log purchasing, taxation and insurance departments.

Powell River Reorganizes Engineering Department

Reorganization of Powell River Co. Ltd.'s engineering department has been announced by Vice President R. M. Cooper.

Transferred from Powell River, B. C., to Vancouver is Chief Engineer Harold Moorhead, who joined the firm in 1942 as resident engineer.

Harold Moorhead

D. H. R. Blake

R. M. Stewart

Norman Walton

Former industrial engineer D. H. R. (Don) Blake has been appointed resident engineer at Powell River to succeed Mr. Moorhead. A. R. M. (Ron) Stewart is plant engineer with increased responsibilities, including all design work at Powell River.

Norman Walton, former assistant to Mr. Blake in the industrial engineering department, has been promoted to the post of chief industrial engineer for the firm. And Leonard A. (Len) Murphy will serve as Mr. Walton's assistant.

Mead Appoints McSwiney Executive Assistant

James W. McSwiney has been named to the newly created position of executive assistant to the president of the Mead Corp. in Dayton, Ohio. The

appointment was announced by President H. E. Whitaker.

Mr. McSwiney has completed 20 years with Mead and its affiliate, Brunswick Pulp & Paper Co. of Brunswick, Ga. Since 1945 he has been assistant secretary and treasurer of the Georgia firm.

Leonard J. Doyle has been named to the newly created position of vice president in charge of research for Union Bag & Paper Corp. He will consolidate the firm's activities in the following fields: market research, product development and packaging machinery.

George N. Carleton has been elected a director and a vice president of Scott Paper Co. In 1944 Mr. Carleton became a director and president of Detroit Sulphite Pulp & Paper Co., which is now a division of Scott. He continues as the Michigan firm's principal executive.

J. W. McSwiney

R. N. Zabe

L. J. Doyle

W. G. Coe

G. N. Carleton

G. L. Heath

Robert N. Zabe, a member of the research staff of the Champion Paper & Fibre Co. in Hamilton, Ohio, has resigned to join the faculty of Western Michigan College. He becomes associate professor in the Kalamazoo school's paper technology department, which is headed by Dr. Alfred H. Nadelman. A graduate of the University of Maine, Mr. Zabe was at one time associated with Oxford Paper Co.

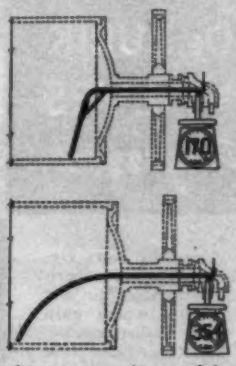
Willis Gleed Coe has been appointed vice president in charge of manufacturing for Personal Products Corp. He was formerly director and vice president in charge of manufacturing for Autograf Brush & Plastics Co. Inc.

Ralph Q. Centola has been named chief industrial engineer for Hinde & Dauch Paper Co. at Sandusky, Ohio.

Scott Paper Co. has named **G. L. Heath** to the staff of the vice president in charge of production. He will be technical assistant, replacing J. W. Shimp, who was recently named manager at the Fort Edward, N. Y. mill. Mr. Heath was production manager of the Chester, Pa. plant at the time of his appointment.

E. C. Beuthin, formerly works manager at the Oakmont, Pa. plant

170 VS. 354



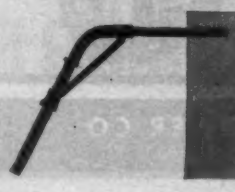
Here is a syphon that features a brace, a spring and low cantilever leverage on the steam joint.

The brace and spring make for easy insertion through the "joint" and proper clearance between pipe and dryer watt.

The leverage on the "joint" is only 170 lbs. in contrast with 354 lbs. usually exerted by the conventional straight pipe. Thus excessive wear on the "joint" is avoided.

Scores of mills use the Auto-Flex and so should you. Get a few on trial and they'll do their own selling.

ROSS MIDWEST-FULTON CORP. • DAYTON, OHIO



MIDWEST AUTO-FLEX SYPHONS

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pH Meter MOD. 115

A full-fledged line-operated pH Meter of remarkable accuracy at the unprecedented price of $115.- (complete incl. electrodes)

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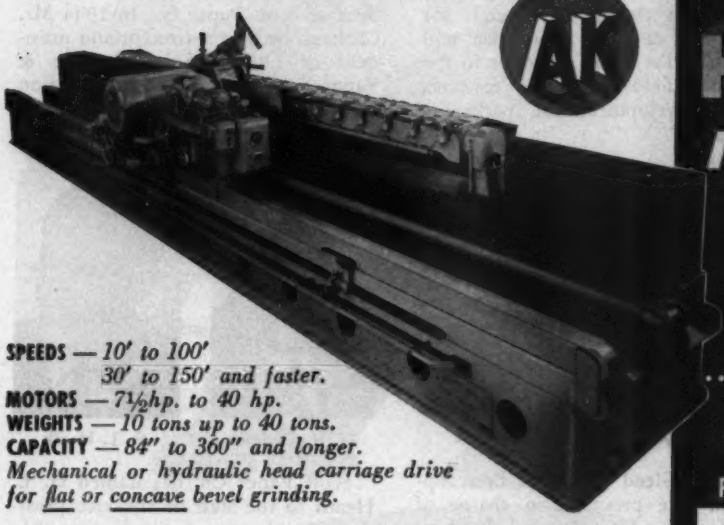


MODEL AK

FOR ACCURACY — FINEST FINISHES

HANCHETT

knife grinders

for the

PULP AND PAPER INDUSTRIES

FOR GRINDING — HOG — BARKER

PAPER TRIMMER AND DOCTOR BLADES

SPEEDS — *10′ to 100′*
30′ to 150′ and faster.
MOTORS — *7½hp. to 40 hp.*
WEIGHTS — *10 tons up to 40 tons.*
CAPACITY — *84″ to 360″ and longer.*
Mechanical or hydraulic head carriage drive for flat or concave bevel grinding.

Other Models.

GF — **medium heavy duty** — *capacity 32″ to 184″*

DH — **normal production** — *capacity 32″ to 108″*

NEW MODEL SK-24

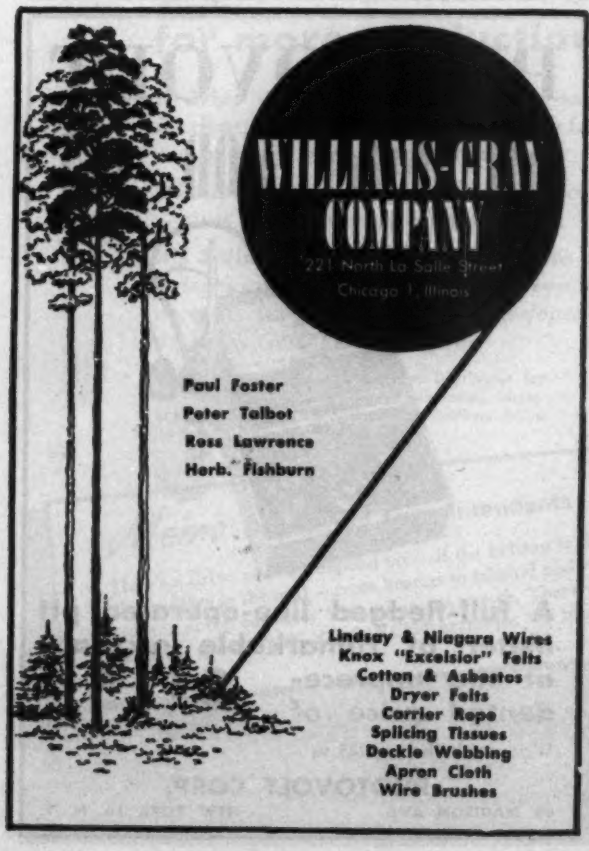
slitter knife grinder

FOR TOP — BOTTOM SLITTERS
CAPACITY 3″ TO 24″ DIAMETER
SEMI OR FULL AUTOMATIC
FINEST IN ACCURACY AND FINISH

HANCHETT MANUFACTURING COMPANY

World's Largest Manufacturer of Knife Grinding and Saw Sharpening Machinery

MAIN OFFICE — Big Rapids, Michigan WEST COAST — Portland, Oregon



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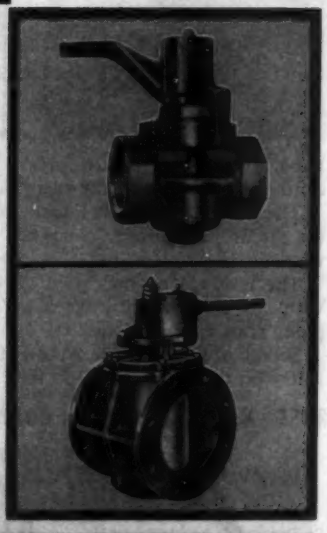
DE ZURIK VALVES *Preferred..*

ON ANY FIBROUS FLOW



For years and years DeZurik Valves have been "preferred valves" in any mill service where pulp and fibers require trouble-free handling. They were originally designed for this specific job—to provide valving that was virtually immune to clogging, jamming and gumming.

DeZurik Valves don't leak because their resilient plug faces close deadshut even with solids on the seat. Without attention or lubrication, they open full or close tight with friction-free E-A-S-E every time.

Write for details and service recommendations.

DEZURIK SHOWER CO.
SARTELL, MINNESOTA

Names in the News . . .

of United States Gypsum Co., has been appointed to the newly created position of manager of the safety section. Replacing Mr. Beuthin at Oakmont is **Max M. Fischer,** formerly of the paper mill at Gypsum, Ohio.

Rayonier Promotions

Three promotions involving key personnel have been announced by H. A. Thurlow, resident manager of the Port Angeles (Wash.) Div. of Rayonier Inc.

George L. Gouker, pulp mill shift superintendent since 1948, becomes assistant superintendent of the Fernandina Div. at Fernandina Beach, Fla. He joined the organization in 1937 as a chemist at Port Angeles.

Replacing Mr. Gouker is Gilbert T. Mickel, a process engineer, who has been associated with Rayonier since 1939. Filling the position of process engineer is James E. Maxfield, who has been mill chemist since 1948.

In other Rayonier changes, Ralph J. Kutchera has joined the Hoquiam, Wash. engineering division as chief engineer. John B. Gray has been named assistant resident manager of the Port Angeles Div. And Howard W. Hiley has been promoted to assistant manager of industrial relations.

Mr. Kutchera was formerly associated with Ebasco Services Inc. and was project engineer in charge of production at Rayonier's new chemical cellulose plant at Jesup, Ga.

Charley Wagner, manager of the Rothchild, Wis. plant of Marathon Corp., has been elected chairman of the manufacturers council of the Chamber of Commerce of Wausau, Wis.

John W. Reimer has been named manager of the new plant of Marathon Corp. to be constructed in Modesto, Calif. **Henry A. Shannon,** who has been in charge of finishing operations at the company's Wausau, Wis. plant, will succeed Mr. Reimer as manager of the Sunnyside, Wash. operations.

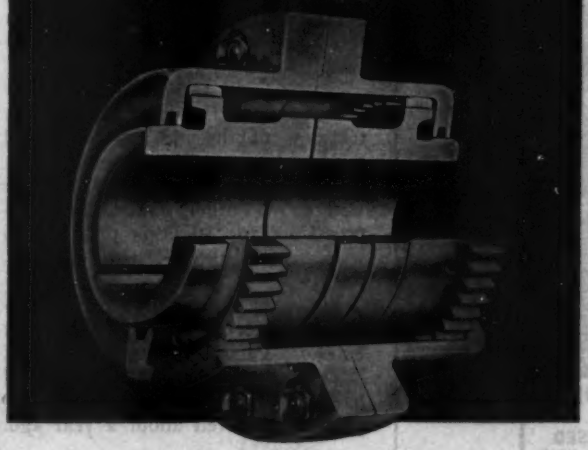
Dr. Harry F. Lewis, dean of the Institute of Paper Chemistry, has been elected chairman of the division of chemical education of the American Chemical Society. He succeeds Prof. Alfred Garrett, who is on the faculty of Ohio State University.

Henry M. Shepard, for the past nine years assistant to the vice president and manager of Eastern Pulp Wood Co. in Calais, Maine, has been appointed Lake States logging engineer for the American Pulpwood Association. His headquarters has not been announced.

Reuben B. Robertson Sr., board chairman of the Champion Paper & Fibre Co., has been honored with the annual distinguished service award of the American Forestry Association for his outstanding work in the field of conservation in business and industry.

John M. Barnes has been made acting industrial and community relations manager at the Canton, N. C. mill of the Champion Paper & Fibre Co. He succeeds **J. Bruce Morford,** who has been given a special assignment in the Hamilton, Ohio general offices to conduct economic studies for Reuben B. Robertson Jr., president of the firm.

POOLE



A COPY OF CATALOG GIVING FULL DESCRIPTION AND ENGINEERING DATA SENT UPON REQUEST.

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POOLE FOUNDRY & MACHINE COMPANY WOODBERRY, BALTIMORE, MD.

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A NEW and BETTER BEATER ADDITIVE

COLD WATER SOLUBLE

It's **chemical "hydration"** by the pound. Power savings and other gains offset its cost.

¼ to 1% on dry fiber weight added to furnish at very **beginning** of refining cycle is **effective.**

For details, see page 235 of Paper and Pulp Mill Catalogue, 1954-55 Edition.

No. 7 will "speak for itself" when tried. How much do you need for testing?

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NECROLOGY

Henry F. Harrison

Henry F. Harrison, a former vice president and director of West Virginia Pulp & Paper Co., died September 27 in Greenport, L. I., N. Y. He was 87.

A native of Cumberland, Md., he became associated with West Virginia 63 years ago as an office boy at the Luke, Md. mill three years after its organization. He was transferred to New York, N. Y., when the company opened an office there in 1894. He was made sales manager in 1904 and vice president in 1941, a position he held until his retirement in 1945. Mr. Harrison was elected to the board of directors in 1935.

John A. Kimberly Jr.

John Alfred Kimberly Jr., 87, died October 10 in Reno, Nev., where he had lived 25 years. His late father was a founder of Kimberly-Clark Corp.

A native of Neenah, Wis., Mr. Kimberly served in the early 1900s as secretary of Shattuck-Babcock Co. of DePere, secretary-treasurer of Neenah Paper Co., and vice president of Union Bag & Paper Corp. of New York, N. Y. He was an organizer of Multi-Print System Co. of Neenah in 1918 and later was an officer of United Autographic Register Co. of Chicago.

A. M. Vanderberg

Abraham M. Vanderberg, 83, retired paper industry official, died recently at the Kalamazoo (Mich.) Home for the Aged.

A native of Kalamazoo, Mr. Vanderberg began his career in 1883, when he went to work at the original Kalamazoo Paper Co. He rose to the position of superintendent of Bryant Paper Co. and later served in similar posts at King Paper Co., Riverview Paper Co., Kalamazoo Vegetable Parchment Co., and at mills in Sartell, Minn.; Groveton, N. H.; Elkhart, Ind., and Port Edwards, Wis. He retired from the industry in 1941.

Mrs. G. A. Edward Kohler, 79, died in Chicago October 9. She was secretary and director of the Kohler System Co., manufacturer of paper machinery. Her husband, who died in 1932, developed the magazine reel and the electric drive for printing presses. She was the mother of John B. Kohler, Crystal Lake, Ill. paper mill consultant, and Frank Kohler, president of Kohler System Co.

Ward E. Pratt, chemical consultant for the Centrifugal Pump Div. of Worthington Corp., died in West Orange, N. J., October 5. He was 64.

Charles Forrest Christy, 54, former mayor of Parchment, Mich., and vice president for sales of Kalamazoo Vegetable Parchment Co., died in Kalamazoo September 28. He had been with KVP 29 years.

Gottlieb E. Manske, 75, an employee of Nekoosa-Edwards Paper Co. from 1893 until his retirement in 1949, died September 29. He had been a machine tender for Nepco.

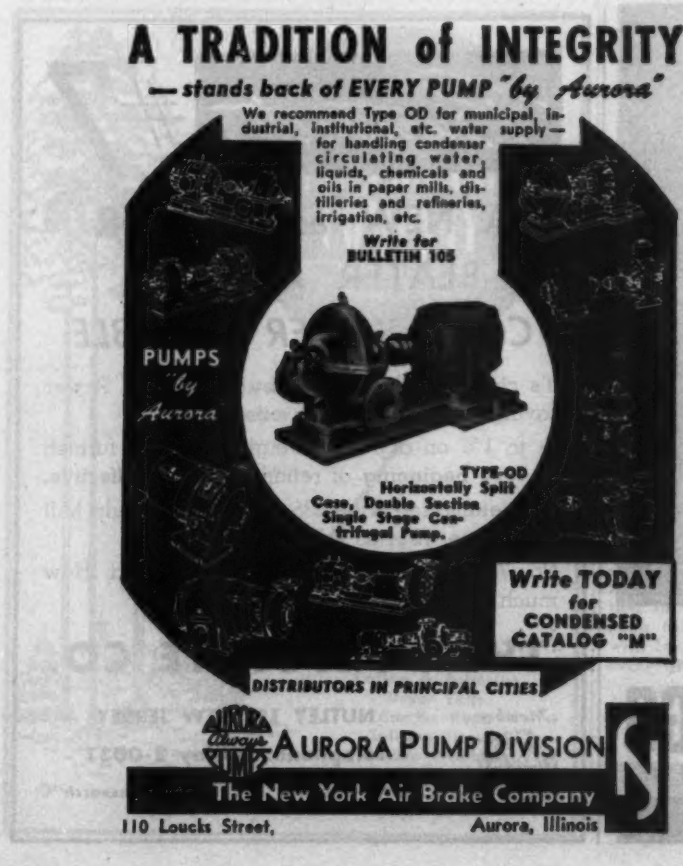
George Letemplier, 49, manager for Canadian International Paper Co. at Pentecost, Que., for the past six years, died September 18. With the firm 28 years, he was superintendent at Clova in the Abitibi region prior to the Pentecost appointment.

Richard B. Havens, 55, former treasurer of the old Cornell Wood Products Co., died in Milwaukee September 17. He had been with the firm (now Cornell Paperboard Products Co.) for 30 years prior to his retirement in 1951.

Finley H. Shiland, former executive engineer for Scott Paper Co. at Chester, Pa., died September 9 at Wilmington, Del. He was 66 and had been with Scott more than 40 years. He retired about a year ago.

Mark Andre, 57, president of Andre Paper Box Co. of Los Angeles, died recently.

James F. Ferguson, 53, vice president and sales manager of General Box Co., died recently in Evanston, Ill.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We recommend Type OD for municipal, industrial, institutional, etc. water supply — for handling condenser circulating water, liquids, chemicals and oils in paper mills, distilleries and refineries, irrigation, etc.
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Write TODAY for CONDENSED CATALOG "M"
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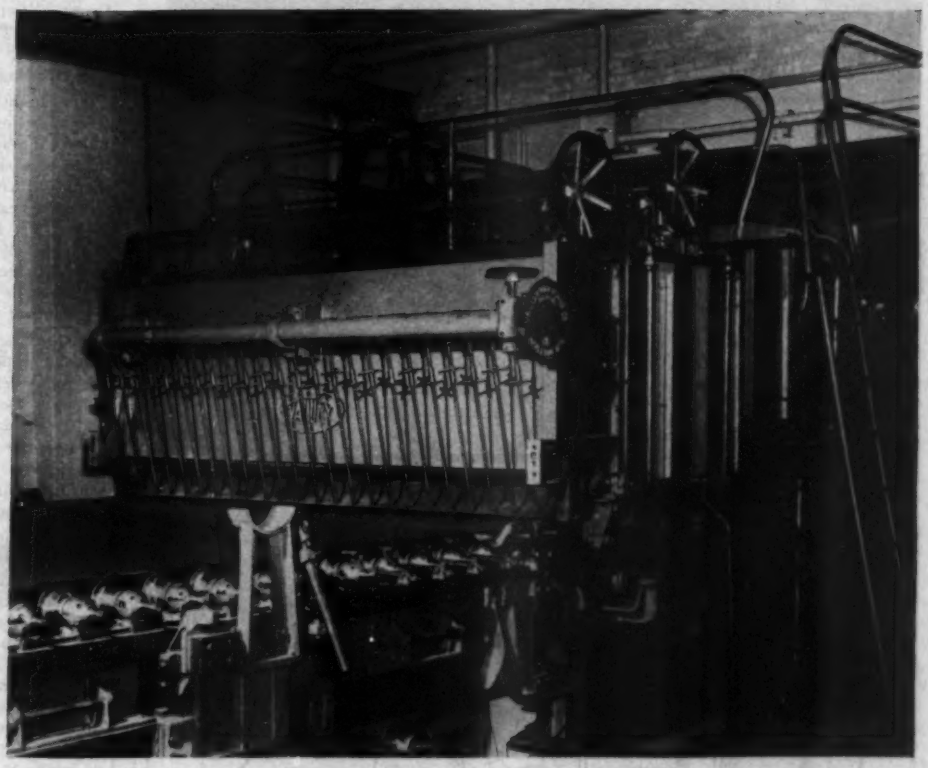
New No. II Fourdrinier at E. B. EDDY CO. Hull, Quebec

it's Valley stock entrance equipment from screens to breastroll



Valley is proud of the major part it is playing in the modernization program of this progressive mill. Other Valley installations at E. B. Eddy Company are on No. 2 and No. 9 paper machines.

Write

VALLEY IRON WORKS CO.
Appleton, Wisconsin

VALLEY
FOURDRINIER

PATENT REVIEWS

MELVIN NORD

Vacuum slice for paper machines

U. S. patent 2,690,099 issued September 28, 1954 to Franklin J. Reilly, refers to a vacuum slice which operates to remove expressed water from the nip of the press roll at a rate fast enough to prevent its accumulation here. The use of this slice, it is claimed, will permit paper machines to operate at a much higher speed than has heretofore been practicable.

Fig. 1, an end view illustration of the manner in which the improved vacuum is associated with a pair of press rolls and the paper carrying felts; Fig. 2, a plan section approximately on the line 2-2 of figures 1 and 3; and Fig. 3, a cross-section on the line 3-3 of Fig. 2, illustrate the operation of the vacuum slice.

To remove the water which collects on top of felt 3 at rolls 1 and 2, a slice 6 extends transversely over the entire width and preferably somewhat beyond the edge of the felts. The slice is pivotally supported by a cross shaft 7 so that its intake edge 8 may be vertically adjusted relative to the surface of the upper belt 3. The cross-shaft 7 is supported on the frame-work of the paper machine by brackets or any other device; and the intake edge 8 is supported to bear the felt 3 under controlled pressure, riding on the surface of the overlaying felt with an ironing or smoothing action.

A chamber 20 is closed except at the rear edge of the slice, where an intake opening or slot 21 is provided. This intake is located between the rear edge 22 of the bottom plate 18 and a bead 23 formed at the rear edge of the cover plate 19. The bead may be bent up or down to adjust the width of the intake opening 21.

For adapting the slice to various felt widths, adjustable end walls 25 are provided. These end walls may each be made of a single plate element, although in the illustrations they are shown to comprise each two parts indicated at 26 and 27, and each part having a screw post 28. By rotating these screws, the end wall sections or parts can be moved inwardly or outwardly according to the direction of turning.

Inside the chamber 20 is provided a vacuum pipe 31, which extends along the entire length of the slice and projects through the end members 15 and 16. At one end, the vacuum pipe is closed by a screw plug 32. The other end of the pipe is provided with a suitable fitting for connection of the pipe to an exhaust pipe or other source of suction.

The suction pipe 31 is provided with a plurality of laterally extending branches 33. This provides an effective means for removing and carrying away any water that collects on the surface of the top felt. The branch suction pipes 33 and their inlet ends are of relatively small cross section, so that the velocity of water flow in the pipes 33 is much greater than the velocity of the water flow through the relatively large nozzle intake opening 21. This high velocity of the water flow in the suction pipes tends to prevent plugging.

The vacuum slice may be employed in association with both the baby and the main press rolls of the paper machine or at any point in the paper machine where water tends to accumulate on the surface. In an experimental installation of a vacuum slice on a cylinder paperboard machine, it was possible to increase the speeds of paper production from about 87 fpm to about 150 fpm without adversely affecting the characteristic of the paper web. Because of the decreased amount of water remaining in the sheet of paper and in the supporting felts, the press roll pressure may be increased, if desired, without causing crushing of the rather fluid paper web. By the improved removal of water, felts are kept cleaner, felt life is greatly extended, and the dryer section of the paper machine is relieved of a considerable portion of its normal work, so that substantial economies are possible in the operation of the dryer section.

Production of water-soluble products from black liquor lignin

Lignin sulfonic acid obtained as a by-product in the sulfite process has in many cases proved to be useful as an emulsifying and dispersing agent. However, it has not been possible to use black liquor lignin obtained from the soda or sulfate processes, because of the insolubility of this lignin and its salts in water.

In U.S. 2,680,113, issued June 1, 1954, to Erich Adler and Erik K. Mauritz, assigned to Svenska Cellulosaforeningens Centrallaboratorium, this problem is solved by subjecting the lignin to an oxidizing treatment, followed by treatment with a sulfonating agent.

The oxidation may be carried out by passing air into a solution of the black liquor lignin at the boiling point. If desired, the oxidation may be carried out in the presence of oxidation catalysts.

The treatment with a sulfonating agent, for example a sulfite or a sulfite and an aldehyde, may be carried out at 100-160° C.

The two treatments may be carried out simultaneously.

Process of cast-coating paper

An improvement in the process of cast-coating paper is described by Philip S. Leighton in U.S. 2,678,890. The patent was issued May 18, 1954, and assigned to S. D. Warren Co.

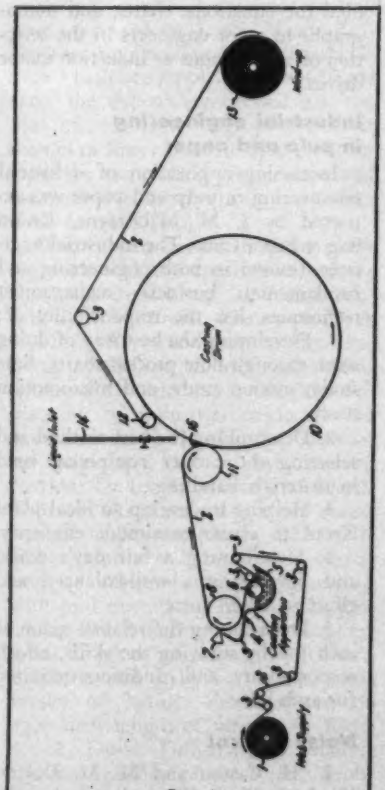


Fig. 4

What, actually, do Vacuum Pumps on paper machines handle?

Paper mill engineers know that it is actually a mixture of air and water vapor, but the custom of rating vacuum pumps in terms of air capacity alone causes this important fact to be frequently overlooked.

The presence of this water vapor causes a considerable reduction of the effective air handling capacity of any vacuum pump except the Nash. In the Nash Vacuum Pump the bulk of this water vapor is effectively condensed, due to the Nash operating principle. The air handling capacity of the Nash is therefore not reduced.

That is one of the reasons why Nash Vacuum Pumps are standard in over a thousand leading Paper Mills.

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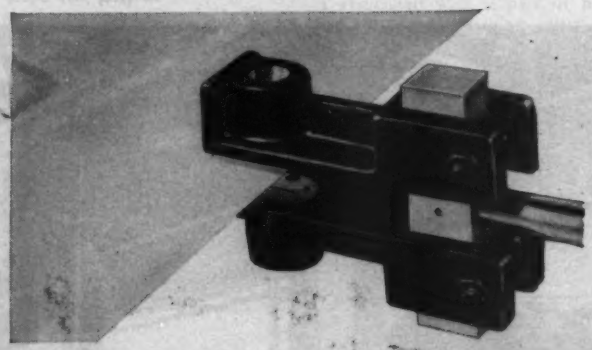
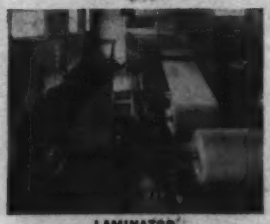
Nothing touches the web but a breath of air



ANILINE PRESS



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In Fig. 4, 1 is a roll of paper from which the paper web 2 is supplied; 3 are web guiding and tensioning rollers; 4 is a conventional web coating unit consisting of the coating container 5, the applicator roller 6, the air doctor 7 with its cooperating roller 8 and the spray baffle 9, which serves to return coating, which is removed from the paper by, the air doctor, to the container 5; 10 is the casting drum with its cooperating roller 11; 12 is a roller which serves to separate the paper from the casting drum; 13 is the web wind-up roller, and 14 is a valved pipe for delivering aqueous liquid onto the surface of the casting drum and the paper web. The flood of water in the nip eliminates the possibility of air being entrapped in the nip and at the same time wets the casting surface and insures good contact between the wet casting surface and wet coated paper. This avoids the possibility of forming flaws or un-cast or non-glossy areas which are usually attributed to air being trapped between the paper surface and the surface of the casting drum.

Tappi Engineering

(continued from page 812)

According to the committee's findings, the most economical buy for synchronous motors are those with 250 per cent pull-out torque and 0.8 power factor instead of those with 300-350 per cent pull-out torque and 1.0 power factor. The sub-committee has assembled the equations, charts, and nomographs to assist engineers in the selection of synchronous or induction motor drives.

Industrial engineering in pulp and paper

Increasing application of industrial engineering in pulp and paper was reported by J. M. MacBrayne, Union Bag & Paper Corp. The industrial engineer, trained in both engineering and fundamental business management techniques, has the responsibility of:

1. Developing the best way of doing work through flow process charts, time study, motion study, and micromotion study.
2. Determining the best method and selecting the proper equipment used in materials handling.
3. Helping to develop an ideal plant layout to assure maximum efficiency.
4. Determining a fair day's work, and developing a well-balanced and effective labor force.
5. Determining the relative value of each job by studying the skills, effort, responsibility, and conditions required for each job.

Noise control

R. H. Caston and M. M. Davies, Kimberly-Clark Corp., listed the following equipment as being especially

noisy: slasher saws, drum barkers, chippers, pulp screens, refiners, hammer mills, large motors, vacuum pumps, suction rolls, high-pressure air nozzles, pneumatic equipment, and some converting equipment.

James T. Roberts, International Research & Development Corp., described a vibration measurement and roll-balancing instrument which enables the operator to eliminate the vibration by balancing the rotating part causing the trouble or replacing the indicated defective belt or bearing. The instrument is of portable electronic design which quickly and simply pinpoints the predominant cause of vibration. Mr. Roberts stated that 50 per cent of motor failure is due to bearing failure, and 83 per cent of bearing failure is due to vibration.

A suction hot-press in the dryer section

J. C. Harper of Downingtown Mfg. Co. reported that the installation of a suction hot-press in the dryer section of a paper machine resulted in an over-all gain in performance. The drying capacity was increased by 12-15 per cent, caliber reduced by 7-9 per cent with increased sheet density; and steam savings of 8-14 per cent were accomplished.

Calender cooling

Various means of calender cooling were discussed by L. G. Janett of J. O. Ross Engineering Corp. These included basic air supply from centrifugal fans, the use of compressed air, the use of relatively high-pressure air though of lower pressure than that provided by compressed air services, and the method of supplying air more effectively to calender rolls.

Other papers presented at the meeting dealt with the application and design characteristics of ac motor control, by R. W. Foster, Champion Paper & Fibre Co.; woodroom refuse handling, by George H. McGregor, Minnesota & Ontario Paper Co.; the application of industrial trucks in the paper industry, by Lee Cirillo, Towmotor Corp.; test data on dryer bearing friction, by L. H. Moore, the Black-Clawson Co.; instrumentation maintenance in paper mills, by Edward J. Kehoe, Marinette Paper Co.; coordination of instrumentation engineering with mill operations, by J. R. Upson, Union Bag & Paper Corp.; flow properties of paper pulp stock, by Richard E. Durst and Lyle C. Jenness, University of Maine; determination of equivalent length of fittings, by Richard E. Durst, University of Maine; and the handling of spare parts problems by maintenance, by P. C. Martiny, Kimberly-Clark Corp.

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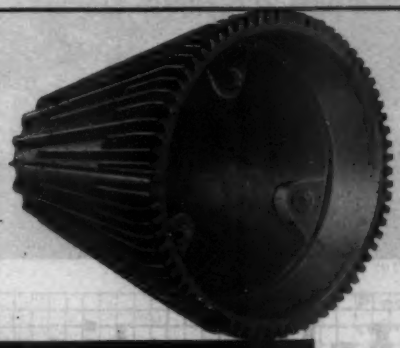

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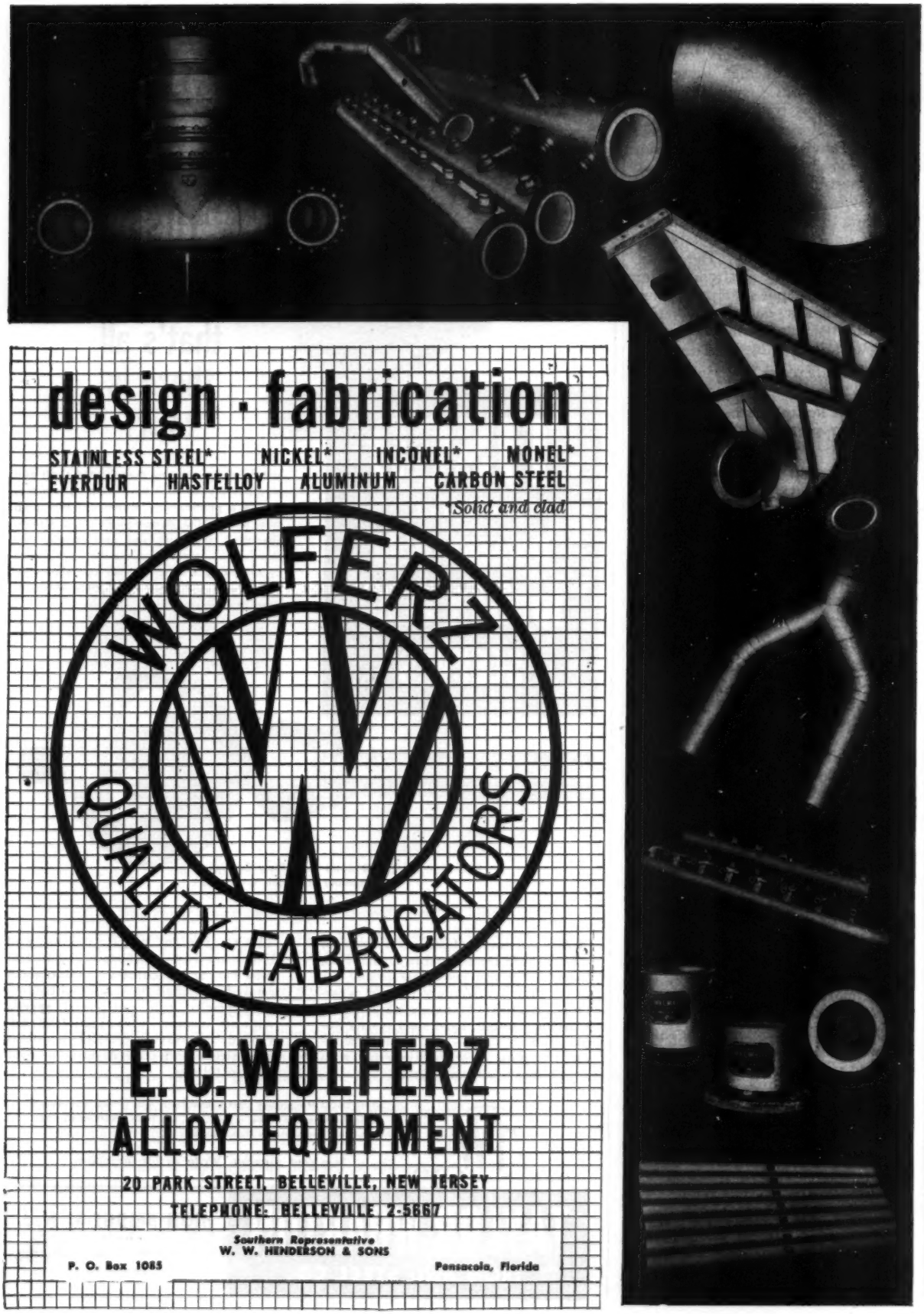
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FOREIGN ABSTRACTS

Wood components and the volumetric swelling of wood in water

An attempt is made to find some relationship between the swelling of spruce and beechwood and the percentage of the various wood components. The results are expressed graphically, and it is evident that no correlation can be found between either the percentage of cellulose or lignin on the one hand, and the degree of swelling on the other.

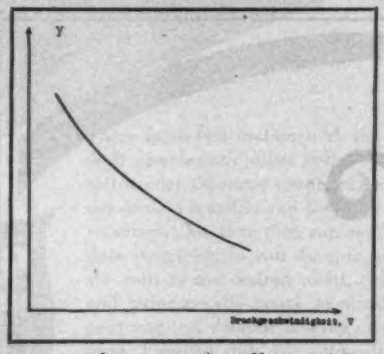
From statistical data, there appears to be a relationship between the percentage of the hemicelluloses ("polyoses") and the swelling of a wood. The relationship (given in mathematical terms) is shown in a series of parabolas, the form of which depends to a certain extent on the amounts of extractives (oils, fats and resins) present in the wood. With increasing hemicellulose content, swelling increases. There is also a nearly linear relationship between the specific gravity of the dried wood (in terms of grams per cubic centimeter) and the percentage of hemicelluloses. This, however, holds only for European and not for tropical woods.

Swelling decreases with increasing amounts of extractives. When samples of wood are extracted with water and then successively with 2, 5, and 10 per cent sodium hydroxide (in each case with an intermediate treatment with water), the woods show marked shrinkage on drying. However, when these samples are then treated for 24 or 130 hours with water, the percentage of volumetric swelling (based on the dimensions of the extracted wood) is far greater than that of the wood that has not been extracted with alkali. Inasmuch as such alkaline extractions removed hemicellulosic materials, this finding appears paradoxical and certainly requires further study. The apparent discrepancies are discussed. Eighteen references are given. Leopold Vorreiter. *Holz Roh- und Werkstoff*, 12, No. 6, 223-6 (June, 1954) (in German).

Printing paper requirements

The printability of art paper, half-tone supercalendered printing paper, newsprint, and calendered glassine is discussed in a fairly extensive illustrated article. The transference number as a function of the amount of ink retained by the printing roll and as a function of the ink viscosity, printing speed, and the compressive stress during printing are discussed with suitable graphs (of which the accompanying figure is typical). Tests for ink and oil absorption are reviewed, especially for those papers that had been sized with starch, rosin or carboxymethylcellulose.

Resistance to picking, dimensional stability and the opacity of printing papers is also discussed, and the significance of the researches that are being carried out in the graphic arts field is alluded to. No references are given.



y = tranference number; V = printing speed

The paper emanates from the laboratories of the Graphic Arts Research Institute in Stockholm. Gösta E. Carlsson. *Allgem. Papier Rundschau* (1954), 625-7, 670-4, and 714-5 (in German).

Behavior of sulfonated wood on extraction with cuprammonium hydroxide

A study is made of sprucewood sulfonated (lightly) under a variety of conditions. On repeated extraction with cuprammonium hydroxide *in the absence of air*, insoluble residues are obtained which vary in amounts ranging from 7 to 37 per cent of the weight of the original wood. On the other hand, their methoxyl content shows no wide variation and ranges from 7.13 to 7.95 per cent. The situation is changed when the sulfonated wood is hydrolyzed at 100° with 0.1 *N* hydrochloric acid prior to cuprammonium treatment, in which case more carbohydrates are removed and the residue, insoluble in cuprammonium, contains over 12 per cent methoxyl.

If the sulfonated wood is treated with cuprammonium hydroxide *in air*, nearly the entire wood dissolves; and after a series of fully described fractionations, a lignin-carbohydrate complex is isolated (through the quinine salt), which contains statistically about four to five lignin "units" to one sugar unit. The carbohydrate component, however, is not made up of a single sugar—hydrolysis shows the presence of mannose, xylose and small amounts of galactose. In the residues insoluble in cuprammonium, the ratio of lignin to residual carbohydrate is approximately 1:1.

The hypothesis of a lignin-carbohydrate complex in spruce wood is discussed. Twenty four references. Hermann Richtzenhain, Birgitta Abrahamsson and Elisabeth Dryselius. *Svensk Papperstidn.*, 57, 473-77 (1954) (original in German, with English and Swedish summaries).

Pressure extraction of cellulose-containing substances

The following raw materials are used in pressure extractions: pinewood, the wood of grapevines, lignite, flax, beechwood and the lignin residues from a hydrolyzed wood. The author gives details for the extraction of these substances with alcohol, either at 130° C. and 8 atmospheres or at 240° and 60 atmospheres.

In most cases, resin-like products termed "crude wax" are formed; and at the lower extraction temperature, cellulosic fibrous materials can also be isolated. When the higher temperature and pressure are used, marked degradation occurs, the "wax" yield increases and residues termed "lignin-wood" are formed. Appreciable amounts of the wax are water soluble and appear to contain (unidentified) fatty acids, and probably some essential oils. Depending on the origin of the raw materials, the lignin-wood contains 1.5 per cent ash, 0.06-1.2 per cent sulfur, 58 to 66 per cent carbon, 5.3 to 5.9 per cent hydrogen and shows a calorific value of 5300 to 6250 heat units. The waxes are soluble in alkali and in alcohol, and insoluble in ethyl ether, petroleum solvents and in benzene.

The industrial possibilities for the waxes and the lignin-wood are discussed briefly. Erich Mittelsteiner. *Wochbl. Papierfabr.*, 82, 305-9 (1954) (in German).

Chemical reaction causing rot stain in moist wood and pulp

This is a contribution from the Research Institute of the Finnish Pulp and Paper Industries. Brown stains are produced when corrosion rots (fungi attacking lignin, as well as other components) grow on wet mechanical pulp. A study is made of the chemical reactions leading to these colored rot stains. About 7 rot fungi and about 27 mold strains capable of growing on moist wood are examined, but of these only the solutions in which *Polyporus abietinus*, *Stereum sanguinolentum* and *Fomes annosus* have been cultured (*i.e.* the filtrates containing enzymes) are capable of oxidizing polyphenols to form brown substances. The enzyme causing these oxidations is probably *laccase*. The authors believe that this discoloration on wet pulp or wood is simply a special case of a chemical reaction common in wood that involves the conversion of phlobotannins into phlobaphenes.

Oxygen requirements of the fungi are studied, and it is shown that whereas discolorations are correlated with the oxygen supply, they can take place even at greatly reduced oxygen pressures (as low as a partial oxygen pressure of 16mm.), at which the fungi grows quite well and causes the oxidation of gallic acid.

A number of different chemicals are studied in the hope of inhibiting enzymatic oxidation. Of these, only sodium azide (NaN_3) proves very effective; even in concentrations of 50 parts per million, this azide nearly suppresses the color formation of groundwood moistened with pyrogallol. However, the use of the azide presents certain hazards. It is very poisonous, and the corresponding heavy metal salts are explosive. Furthermore, the sodium salt is fungistatic rather than fungicidal. It blocks the enzyme system without killing the organism. Twenty-two references are given. G. O. Gadd and V. Wartiovaara. *Paper and Timber* (Finland), 36, No. 7, 291-4 (1954) (in English).

Determination of lignin in bleached pulps

The method relies on the uniformity of the so-called oxidation coefficient, which gives the part of a milligram of lignin that is oxidized completely to carbon dioxide (in a wet combustion) by 1 cc. of 0.1 *N* potassium dichromate. The value calculated on the basis of ultimate analyses of various spruce lignin preparations is practically constant at 0.42 mg. This is also the average value found by actual analysis and, thus, appears to be valid. Provided the analyses are carried out carefully (in extractive free pulps), the carbohydrates of the pulp do not interfere; however, if the conditions are not adhered to rigorously, high values may be obtained as the result of insoluble sugar degradation products.

The analysis is carried out as follows: 5 g. of the bleached pulp are treated ½ hr. with 50 cc. cold 57.6 per cent sulfuric acid; thereupon 50 cc. of 87.6 per cent sulfuric acid are added gradually, and the temperature is kept at or below 20° C. by cooling in an ice bath. The mixture is allowed to stand at room temperature for two hrs and is then diluted with 1 l. of (twice) distilled water and boiled for 10 min. Longer boiling, an initial rise in temperature, or more concentrated acid may give humin substances.

After standing overnight, the lignin is filtered on a fine, fritted glass crucible and washed with 10 per cent acid. The crucible is then placed in a larger container provided with a stirrer containing 40 cc. 0.1 *N* dichromate and 40 cc. of concentrated sulfuric acid. The container is placed in a water bath and kept at 100° with constant stirring. The cooled mixture is diluted with 120 cc. of water, and the excess dichromate is back-titrated with a 0.1 *N* solution of ferrous ammonium sulfate, using ferroin as indicator. Controls free from lignin are run from time to time. Various bleached pulps are analyzed by the wet combustion methods and give lignin contents ranging from 0.022 to 0.094 per cent.

In the case of an unbleached kraft pulp, the usual gravimetric Klason procedure gives 6.82 and 6.84 per cent lignin. The new wet combustion method gives 6.56, 6.79 and 7.06 per cent lignin, when the technique outlined above is modified so as to use only 0.1 g. pulp. H. Troitzsch. *Assoc. tech. ind. papetiere, Bull.*, 1954, No. 4, 134-42 (in French).

Fundamentals of papermaking

This is a comprehensive review which deals with the following topics: fiber orientation in a moving stock suspension; pulp flocculation; the rate of flowing stock and its relationship to the velocity of the wire and its effect on the fiber orientation in the resulting paper sheet. Other items alluded to are the effects of the shake, couch rolls, wet presses, and draws and dryers on the strength properties (in machine and cross-machine directions of the paper web) and the interaction of the various physical agencies on sheet formation and on paper manufacture.

Twelve tables, two figures, and about 103 references are given. Harald Fiebiger. *Wochbl Papierfabrik.*, 80, No. 23, 878, 80, 82 (1952); 81, No. 7, 227-30; No. 10, 340-4 (1953); 82, No. 1, 7-9; No. 5, 147-50 (1954) (in German).

The year 1954 sees Lindsay enter upon a second half century of service to the paper industry. We pledge our utmost effort towards making that period more and more resultful.

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There is no lost motion with the new 60-B *continuous* toilet roll or towel roll winder. Operator simply places uncut core on mandrel and lowers it into receptacle. Machine then *automatically* does everything — cuts the core, winds the rolls to the desired count, cuts off and automatically starts to wind the next mandrel without slowing or stopping. Finished rolls are automatically stripped from mandrel and delivered to wrapping machine through conveyor. Produces positive sheet perforations and sharp, clean-cut edges. Average speed is 1000 feet per minute with constant tension unwind. Machine operates with equal facility on hard type of papers or those of multi-ply facial quality. Built in standard widths up to 81". Machine shown also has attached embossing unit. Write for complete details.

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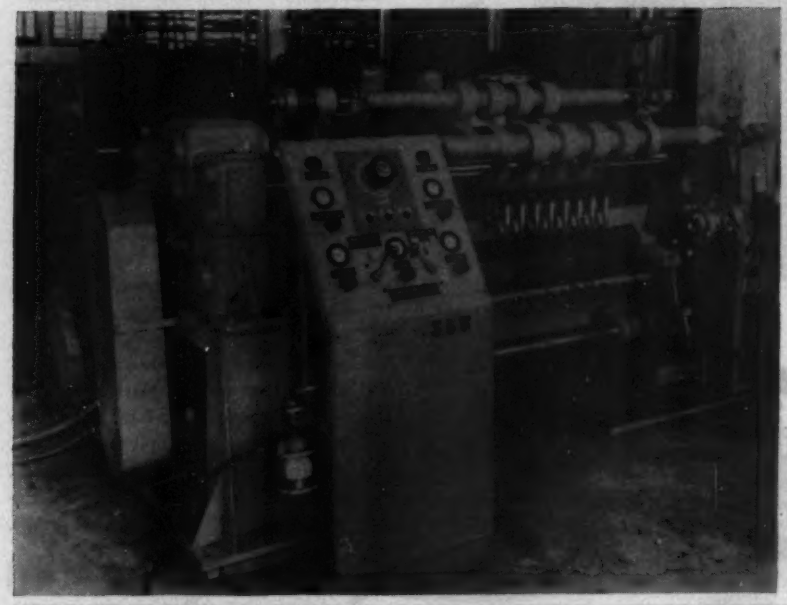

Multi-purpose slitting and roll winding machine

A new, high-speed, multi-purpose slitting and roll winding machine for use in the converting industry is now on the market. For the first time, one machine, the "Model 500", has provisions for either shear-cut, score-cut or razor-type slitting, adapting the machine to the slitting method best suited to various materials. According to the manufacturer, this choice of slitting methods provides versatility and economy for rapid changeovers when producing rolls of foil, paper, etc.

This machine is said to be capable of running at speeds up to 2000 fpm and can be built to trim parent rolls up to 62 in. wide. It has a rewind capacity of 20 in. diameter and can be equipped with a built-in constant tension and electric side register control.

Among the features of the "Model 500" are the highly sensitive automatic controls, eliminating the guesswork of hand set adjustments. Both the rewind roll contact pressure and the rewind core friction are air controlled, providing optimum density control of the rolls throughout the winding cycle. *Cameron Machine Co., 61 Poplar St., Brooklyn 1, N. Y.*

Redesigned end-shield bearing slip motor

Redesign of Allis-Chalmers' line of large end-shield bearing synchronous and wound rotor induction motors (Types AB and ANY) of four and more poles has been announced.

Modern in appearance with greater mechanical protection and increased accessibility to mechanical and electrical parts, the motors' fabricated-steel stator yoke has been lengthened to accommodate slip rings and brush rigging with access openings of ample proportions for brush inspection and maintenance.

Rotor or slip-ring leads are not exposed in the new design. Internal connections are made to an external rotor lead terminal box for conduit connection.

Overhung exciter mounting on synchronous machines is accomplished by means of a split bracket secured to the motor end shield. The bracket permits full accessibility to the capsule bearing. In addition, the upper halves of both bracket and end shield can be removed for access to motor windings without disturbing the exciter or the capsule bearing housing. *Allis-Chalmers Mfg. Co., Milwaukee 1, Wis.*

Laboratory dissolver

A laboratory version of the "Ultrafast" dissolver that can also be used for small scale production work has been developed. This new laboratory model utilizes any one of several patented Cowles impellers.

The laboratory machine, designated as Model 1-VT, is 30 in. high and is equipped with a hand-operated hydraulic lifting device that raises it to a maximum of 44 in. Mounted on a 10 x 12 in. base, the entire machine occupies an area 10 x 24⅛ in. It utilizes a 1 hp. motor. Three patented Cowles impellers of various sizes, 3, 3½, and 4 in. in diameter, will be supplied with the machine as standard equipment.

Results of experiments with the laboratory machine will be reproducible in production work. The new machine can also be used for production batches up to five gallons in solution or dispersion situations where production requires small, intermittent use of high-speed dissolving equipment.

Installed for laboratory work, the Model 1-VT dissolver will give manufacturers an opportunity to experiment with Cowles equipment in their own plants. Heretofore, it was necessary to either purchase a production size machine or send material to Cowles for experimental work. *Cowles Co., Inc., Cayuga 1, N. Y.*

Insulation cement

Field installation of "Styrofoam," product of Dow Chemical Co., to wet tanks, pipes, ducts, and even under water to many surfaces is now claimed possible. It is reported that Hayes waterproof insulation cement No. 1484 can be applied by brush or spatula to sections of Styrofoam pads, sheets, or pipe covering and immediately bonded into place on a wide variety of wet and low-temperature surfaces.

The adhesive is tacky and gummy immediately after application and retains its clinging character indefinitely whether dried, exposed to dry or moist surfaces or even under complete immersion in water, according to the manufacturers. Since the adhesive is unaffected by continual sweating of pipes and similar surfaces, no shut-down of equipment and lines is required for installation purposes.

It is available in 1 and 5 gal. cans. *Hayes Adhesive Co., Inc. Div., Morningstar, Nicol, Inc., Union Blvd. at Brown Ave., St. Louis 15, Mo.*

Self-leveling automatic crane

The newest development in "Trak-Rak" cranes is an automatic self-leveling device which stops the hoist at the selected rack on a perfectly even level to permit loading or unloading instantly without the necessity of time-wasting maneuvering. The crane is said to provide 100 per cent selectivity of storage materials and operates in an extremely narrow aisle to serve both sides.

Rolls 24 in. in diameter with a length of 9 ft., 12 ft. or 15 ft. and a weight of 1000 lb. each are conveniently handled with only 50-in. aisles to effect further storage space savings, according to the manufacturer. The unit is self-contained, and the

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When you call Bailey Meter Company, you get the help of years of experience as well as recommendations from a wide selection of measuring and controlling devices.

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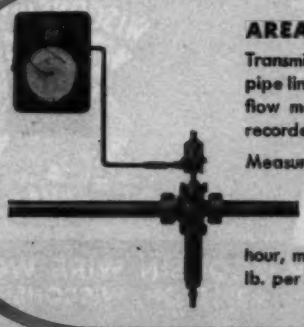
P-26



AREA TYPE FLOW METER

Transmitter goes into 1, 2 or 4 inch pipe line like a valve and transmits flow measurements electrically to recorder in remote location.

Measures oil and other clear liquids under static pressures up to 600 psi. Minimum range 0 to 1200 lb. per hour, maximum range 0 to 9600 lb. per hour.

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Fiske Brothers Refining Co.
Newark 5, N. J. • Toledo 5, Ohio

New Products . . . . . .

crane operates on rails mounted directly on the top of the storage racks.

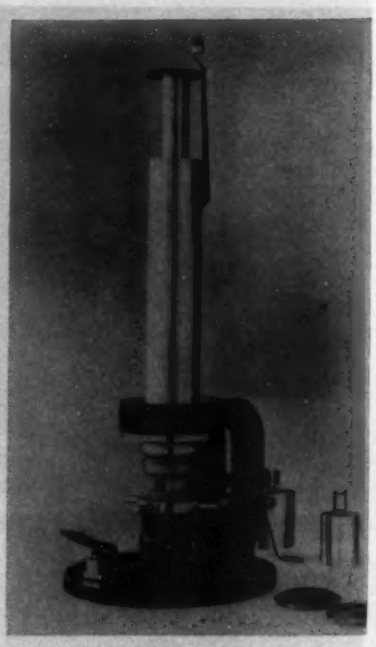
This storage system has four basic motions, which include bridge, trolley travel, lifting and 360° column rotation. Any or all motions can be manual or electric, and racks are designed to store any type of material. *Chicago Tramrail Corp., 4000 Washington Blvd., Chicago 24, Ill.*

Steam joint

The new "Spiro-flo" steam joint features a tangential spiral steam inlet to provide uniform steam distribution, eliminating the common tendency for the jet of steam to impinge on the far end of the dryer only.

The steam joint is built for operation with both stationary and rotating syphons for rotation to left or right without change, at pressures up to at least 250 lb. and dryer speeds up to 200 rpm. It is said to be a self-aligning, self-supporting and wobble free joint of light weight, with an extremely low friction load and a corresponding low rate of wear. Other features include the absence of internal springs, ball bearings or need of lubricating.

The "Spiro-flo" is of ductile iron construction and is rust-resistant. It is offered for operation on all size dryers and at all machine speeds, from lowest to the very highest. *Shartle Div., Black-Clawson Co., Middletown, Ohio.*



High-pressure porosity and smoothness tester

A new high-pressure porosity and smoothness testing instrument, the "H-P-S" tester, for measuring the smoothness of single sides of paper, paperboard and paper products has been announced.

This tester is particularly useful on carton stock, manila, envelope, kraft and

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cards, as well as papers, to test the felt and wire sides separately. This specialized test supplements those possible on the "S-P-S" tester (smoothness-porosity-softness), which measures the average smoothness of both sides, and usually of several sheets simultaneously.

Testing times for porosity are only 4 per cent of the time required on the standard "Densometer" or the "S-P-S" tester and are the same as those on the high-pressure "Densometer."

This new tester consists of outer and inner cylinders arranged to force air through the sample. The inner cylinder floats in mercury, guided by polished balls which are held loosely in the outer cylinder. The inner cylinder is graduated to 2.5 cc. for the first space and, thereafter, each 5 cc. for a total of 30 cc. It is made of thin-walled stainless steel tubing. Clamp plates have an orifice opening of 1.0 sq. in. *W. & L. E. Gurley, Industrial Div., Troy, N. Y.*

Flexible plastic pipe

A new lightweight flexible plastic pipe has been developed. Known as the Series "200," this pipe is made of 100 per cent virgin polyethylene resin and is guaranteed to be non-toxic, according to the manufacturer, who also claims that it will not rot, rust, or corrode, is easily handled, and requires no special tools to install it. The pipe is said to last indefinitely. *Quaker Rubber Corp., Div. of H. K. Porter Co., Inc., Tacony & Comly Sts., Philadelphia 24, Pa.*

Chemical modification of microcrystalline wax

A newly developed chemical modification of microcrystalline wax, known as "Polymekon" wax, has recently gone into full-scale plant production. Until now it had been available only in pilot plant quantities.

This wax is not a blend of microcrystalline waxes with polyethylene, but a unique wax product produced by further chemical processing. According to the manufacturer, the outstanding characteristic of "Polymekon" is its ability to form films. Because of this, it is being recommended as an additive in the manufacture of waxed paper, cartons and containers, as well as many other products. *Warwick Wax Co., Inc., 10th St. and 44th Ave., Long Island City, N. Y.*

Adjustable V-belt

A new "Veelos" adjustable V-belt for D and E drives is now in production. Known as TD and TE, it is said to be the easiest V-belt to couple and uncouple ever made.

These link V-belts are made of plys of specially treated high-tensile canvas duck, joined by riveted studs with removable cup-washers and T-screws. This unusual construction gives greater strength and durability at all key points yet enables the belts to be coupled and uncoupled easily, according to the manufacturer. The V-belts

The New RES-LIN SUCTION BOX COVER

PROVEN BY TEST

offers these features:

Even distribution of fabric assures EVEN WEARING. Ends of threads contact wire assuring uniform surface to wire. Increased wire life. Many years of trouble free service. Resurfacing reduced to a minimum. Does not absorb water. Doesn't contract or expand. Requires no wet storage or care when machine is down. Easily installed. Greater strength and rigidity. Greater open area.

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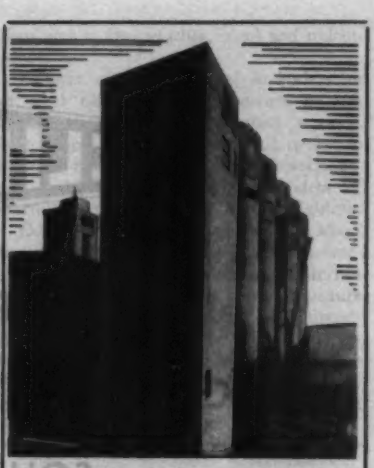

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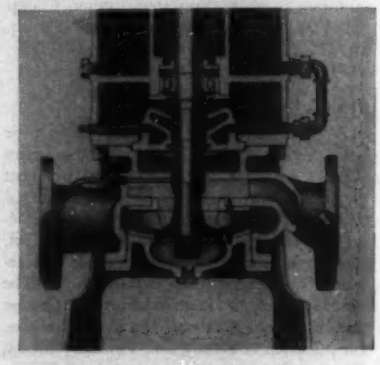
are said to provide maximum flexibility to last longer, run cooler and smoother.

Two types are available: regular rubber coated for general services and oilproof for oily and high-temperature drives. *Manheim Mfg. & Belting Co., Manheim, Pa.*

Edge alignment equipment

The new remote control edge aligner and differential pressure senser units maintain a sensing accuracy of 1/100 of an inch, according to the manufacturer. A practical feature of the differential pressure sensing system is its self-cleaning outward flow. *H. G. Weber & Co., Inc., Kiel, Wis.*



Stuffing boxless pumps

The "Nobox" centrifugal pump is the only pump entirely without packing boxes that has the sealing located at the suction side, according to the manufacturer. With respect to capacity and pressure height, this pump is designed in three major series.

The difficulties involved in handling liquids with a high concentration of solids, and corrosive and abrasive liquids have been largely reduced with this pump, it is claimed. The liquid lock wheel is the major part of the design and the sealing action, located at the suction side, occurs entirely hydrodynamically. The liquid-sealing wheel maintains by rotation a ring of liquid, stopping air from entering the pump at the same time as it prevents the liquid in the pump from leaking out.

These pumps are vertically mounted and designed so that it is possible to dismantle the whole pump without removing the motor or motor stand. *Jönköpings Mekaniska Werkstads AB, Jönköping, Sweden.*

Redesigned green liquor section

Announcement has been made of the redesign of the green liquor clarifier and dregs washer in the Dorr continuous recausticizing system based on the recently proven principle of selective density feeding. It involves the substitution of a single unit compartment clarifier equipped with a special feedwell for the four-compartment machines previously used in the green liquor section. According to the manufacturer, investment and operating costs are substantially reduced by this design, and overflow clarity is comparable to that of tray units. *Dorr Co., Barry Place, Stamford, Conn.*

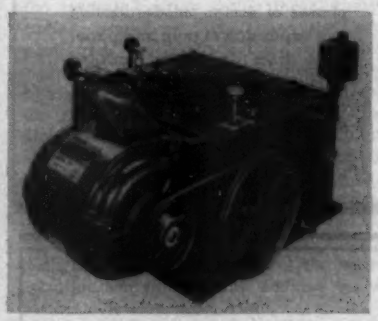
Heating-ventilating units

A new line of Herman Nelson heating-ventilating units, with capacities ranging from 1,200 cfm to 15,000 cfm, can provide heating, ventilation, filtering, humidifying, or any combination of these functions. Models are available for installation on floors, ceilings, or walls.

The units are designed for extreme flexibility in performance and installation. In addition to the wide range of cabinet designs and air volumes offered, the heating-ventilating units are available with any of 10 different heating coils: both non-freeze and standard steam, and hot water coils.

Sectional design of the units, with the completely rotatable fan sections, permit the selection of just the components required for a specific job. Sections offered include the heating coil section, 1-2 or -3 centrifugal fan section, and humidifier. Casings are available for ceiling, wall, or inverted installation, and floor models are offered with both open and closed bases. Motors and V-belt drives can be installed on either side of the units.

To reduce maintenance costs, these heating-ventilating units have been designed to be as nearly self-maintaining as possible, according to company engineers. The unit casings are constructed of 8 and 12 gauge steel frameworks, with 16 gauge steel panels. *American Air Filter Co., Louisville, Ky.*



Hydraulic oscillator

The new "Hydroscillator" rewinder attachment is said to assure smooth, tight rolls of paper. By imparting oscillations to the rewinder, this mechanism prevents wrinkles in the oncoming web and averts the formation of hard and soft spots in the roll due to variations of caliper.

The "Hydroscillator" consists of a hydraulic cylinder and pump in a heavy welded steel housing, with control valves for making the several adjustments. Speed of oscillation, length of stroke, and impact or thrust can be readily varied to meet the situation, according to the manufacturer. The unit is applicable to any type of rewinder for any width and weight of roll.

Oscillation is imparted to the roll by attaching the oscillator to the rewinder shaft by means of a clevis or other connector. The pump is driven by a 1½ hp motor through a V-belt. *Ross Midwest-Fulton Corp., Dayton, Ohio.*

Glass-surfaced storage structure

The "Harvestore," a glass-surfaced steel storage structure, claimed to be the modern solution to difficult storage problems, has been introduced to the market. This glass-lined storage structure is said to end maintenance upkeep, rust and corrosion problems and is fire, weather, wind and rodent-proof.

A layer of glass is fused to both sides of steel plate, and the structure is constructed of many curved plate sections, bolted and sealed together. All work in erection takes place at ground level. Special tools, jacks and a superintendent of erection are furnished by Sprout-Waldron.

Designed for use with this storage structure is the A. O. Smith sweep-arm mechanical unloader with which the materials are unloaded from the flat bottom structure (no hoppers needed). The unloader literally eats its way around the bottom and allows the easy unloading of material that has a tendency to pack and bridge, it is claimed. The unloader is also adaptable

teaching a wire to toe the line...

It's model 706, new Gilbert & Nash Hydra Guide with rotary palm* for wire, wet felt, and dryer felt service. Shown in actual use—now in its second year—at Sorg Paper Company, Middletown, Ohio, #6 machine, Smith mill.

High speed machines—even variable speed machines—are no handicap to model 706. Its guide roll moves only in a *horizontal* plane to avoid undue wire stretch . . . continuously corrects at a plus or minus 1/64 inch . . . eliminates over-correction or hunting.

Hydraulically operated by water pressure—where filtered water pressure is 40 to 60 lbs.—or by oil pressure with a pump of one gallon per minute capacity. Send for free Hydra Guide folder or, at no obligation, write for a Gilbert & Nash representative to call at your mill.

GILBERT and NASH APPLETON, WISCONSIN

*Manufactured and sold exclusively by The Appleton Machine Company

for installation in existing bins and storage silos.

This storage structure is furnished in three different diameters, 14, 17, and 20 ft., and in seven different heights, from 20 to 50 ft. Capacities range from 2,500 to 14,000 cu. ft. *Sprout, Waldron & Co., Inc., Logan St., Muncy, Pa.*

Automatic electrical wiring inspection system

The new "Cable Inspector" is an automatic electrical wiring inspection system based on continuous scanning circuitry, developed for the chemical processing industry.

One of the unique features provided to construction and maintenance technicians

New Products . . . . . .

by this system is automatic megging. Conductors are scanned at the rate of one per second, it is claimed. The standard unit is capable of checking insulation resistances to 110 megohms at 350v dc. Higher resistance limits and test voltages can be furnished if required. This extreme sensitivity is achieved by an electronic leakage detector. In addition, the "Inspector" is used to locate direct shorts and automatically "ring-out" multiple circuits.

This system can automatically identify individual wires in multi-conductor cables, conduit, wireways, and terminal boxes in about 1/12,500 the time required by slow manual methods. On a group of 100 wires, 10,000 tests of interconductor insulation resistance and insulation resistance to ground are performed in 200 sec. according to the manufacturer.

This equipment is designed for original test and maintenance of control cables, transmission lines, instrument and control panels, feeder and branch circuits, thermocouple leads and communication lines.

Adaptors can be provided to match any of the various types of plug-in connectors. Fanning strips are used to check conductors wired to terminal blocks. *Panascan, Div. of Panellit, Inc.*, 7401 *N. Hamlin Ave., Skokie, Ill.*

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NEW LITERATURE

Books

LOCKWOOD'S DIRECTORY OF THE PAPER AND ALLIED TRADES. 1955 edition. Published by Lockwood Trade Journal Co., Inc., 15 West 47th St., New York 36, N. Y. Regular edition and pocket-size traveler's edition. $10.00.

This 80th annual edition records changes made in the industry during the past year, which are shown throughout all sections and lists, including many additional entries such as new concerns, new products manufactured, etc.

The products of the paper and pulp mills and of the converters or manufacturers of products made from paper, cardboard, etc., are shown in alphabetical, classified order. Also included are the products of the manufacturers of machinery, equipment, and supplies purchased by the mills and converters.

MANUAL OF EXCELLENT MANAGEMENTS (1954 edition). Published by American Institute of Management, 125 East 38th St., New York 16, N. Y. 8½ x 11¼. 96 pages.

This manual and the listed companies are the result of the year's study of some 4,000 businesses throughout the United States and Canada, according to the institute's Comparative Management Audit methods.

The manual lists 348 excellently managed companies in four basic lists: alphabetical, geographical, by industry, and by the Institute's rating within the 348 companies themselves. There are also supplementary lists showing the companies with the greatest growth potential, the best records of stability of net income, and the most outstanding outside boards of directors. A final listing shows the uninterrupted cash dividend records of all 348 companies.

In addition, the manual briefly discusses the Management Audit methods of the Institute and analyzes the scope of the method and the reasons behind the entire operation of management auditing as it has been developed by AIM.

A special feature of the book is a full-scale public Management Audit of one of the top twelve companies in the country in 1953.

SOURCE OF SUPPLY DIRECTORY—1954 edition. Published by Howard Publishing Co., 111 W. Washington St., Chicago 2, Ill. 1,262 pages. Paper-bound. 4½ x 6½. $6.00.

This annual publication is a directory of paper and allied lines for paper merchants and converters. Manufacturers of paper, paper products, converting machinery, and supplies are listed alphabetically. Product lists cover paper, paper products, converting machinery and supplies. Also given are paper merchants of the United States, U. S. possessions, and the Philippines, manufacturer's representatives and brokers, and exporters and importers, listed according to city and state.

PRICING AND ESTIMATING METHODS FOR THE BOXBOARD INDUSTRY. By Norman J. Elliott. Published by Haywood Publishing Co., 22 E. Huron St., Chicago 11, Ill. 9 x 12. 44 pages. $5.00. Paper-bound.

This book contains a series of 12 articles which have appeared in *Boxboard Containers* magazine. These articles are concerned with determinations and estimates of cost factors and pre-production estimates of costs of boxboard containers, as well as the various types of information and techniques to be employed for such purposes. All the techniques and requirements for compiling, analyzing and adequately using accounting, cost and operational data are outlined so as to establish not only prices, but also management control. Forty-five illustrations are included.

HISTORY OF AMERICAN INDUSTRIAL SCIENCE. By Courtney Robert Hall. 40th St., New York 18, N. Y. 5½ x Published by Library Publishers, 8 West 8¾. 453 pages. $4.95.

A method, which is in many ways unique, has been used in the preparation of this book. While ample attention has been given to the historic development of industry, bold and original use of new industrial material has been made. This new material has been furnished by sixty of the leading corporations in America, thus giving the volume a current character.

The author has interpreted a wide variety of concise facts on American industry in terms of such vital matters as our national defense and the possibilities of future social and political developments in the western world.

The author states that the plan of the book is to develop rather broadly the basic inventive phases of our larger categories of industry into their present state, with speculation as to their futures. As this plan is unfolded, it is the author's aim to include as many of the ramifications of these great industrial categories as space allows.

There are 14 chapters, one of which discusses pulp, paper and print. This chapter is divided into four sections, covering the manufacturing process, some characteristics of the paper industry, printing and publishing, and the present and future of paper and print.

Manufacturers' Publications

Through the co-operation of manufacturers and suppliers, THE PAPER INDUSTRY *lists the following catalogues, bulletins and booklets. They may be obtained without cost or obligation, unless otherwise specified, by writing direct to the manufacturers. Please address requests on your company letterhead.*

Chisel Plate Attachment (Film). Clark Equipment Co., Industrial Truck Div., Dept. PI, Battle Creek, Mich.—How National Container Corp. reduced freight rates and cut labor costs in the handling of paper rolls is the theme of a new black-and-white, eight minute film titled "Chiselling Costs," which illustrates the use of a chisel plate attachment for a fork lift truck.

Water-soluble Resinates. Hercules Powder Co., Dept. PI, Wilmington, Del.—This technical booklet gives information about the use of "Dresinate," a series of sodium and po-

STATEMENT OF THE OWNERSHIP, MANAGEMENT, AND CIRCULATION REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912, AS AMENDED BY THE ACTS OF MARCH 3, 1933, AND JULY 2, 1946
(Title 39, United States Code, Section 233)

OF THE PAPER INDUSTRY published monthly at Mendota, Illinois for October 1, 1954.

1. The names and addresses of the publisher, editor, managing editor, and business managers are: Publisher, Fritz Publications, Inc., 431 S. Dearborn St., Chicago, Ill.; Editorial Director, A. W. J. Dyck, 431 S. Dearborn St., Chicago, Ill.; Business manager, A. Scott Dowd, 431 S. Dearborn St., Chicago, Ill.

2. The owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding 1 percent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a partnership or other unincorporated firm, its name and address, as well as that of each individual member, must be given.) Fritz Publications, Inc., 431 S. Dearborn St., Chicago, Ill.; Mrs. Annie C. L. Fritz, 6801 Crandon Ave., Chicago, Ill.; Mr. A. Scott Dowd, 6801 Crandon Ave., Chicago, Ill.; Miss Abigail C. Bruce, 2446 Oak Park Ave., Berwyn, Ill.

3. The known bondholders, mortgagees, and other security holders owning or holding 1 percent or more of total amount of bonds, mortgages, or other securities are: None.

4. Paragraphs 2 and 3 include, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting; also the statements in the two paragraphs shows the affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner.

A. SCOTT DOWD, Business Manager.

Sworn to and subscribed before me, this 30th day of September, 1954.
[SEAL]

(My commission expires Dec. 26, 1956.)
EDLA DURBON, Notary Public.

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New Literature . . .

tassium salts of various processed rosins and tall oil, as emulsifying agents, detergent additives, dispersants, foaming and flotation agents, viscosity-control agents, and industrial sizing compounds.

Mixed Flow and Axial Flow Pumps. (Form 7280) Ingersoll-Rand Co., Dept. PI, 11 Broadway, New York 4, N. Y.—This new booklet on the Class BPM mixed flow and APL axial flow pumps incorporates dimensions, a materials table and sectional drawings showing the features of the pumps with detailed explanations of each.

Transmission Belt. Raybestos-Manhattan, Inc., Manhattan Rubber Div., Dept. PI, Passaic, N. J.—Brochure No. 6638 explains design characteristics of a new concept of belt power transmission known as the "Poly-V" drive. It is an endless belt with molded lengthwise ribs.

Industrial Products. American Brake Shoe Co., Dept. PI, 230 Park Ave., New York 17, N. Y.—This new catalogue describes ferrous castings, non-ferrous castings, bearing materials, sintered metals, steel forgings, welding products, air compressors, industrial pumps, dredge pumps, and railroad products.

Knife Grinders. Hanchett Mfg. Co., Dept. PI, 906 N. State St., Big Rapids, Mich.—This catalogue on knife, shear blade and circular slitter-type knife grinders presents full descriptive data dealing with the construction, design, capacity and types of drives.

Pressure Filters. Permutit Co., Dept. PI, 330 W. 42nd St., New York 36, N. Y.— Bulletin No. 2225B, describing Permutit's line of pressure filters and their accessories, includes specifications, operating characteristics, outline dimensions, and typical installation photographs.

Pressure Elements. Foxboro Co., Dept. PI, Foxboro, Mass.—A completely new line of pressure measuring elements, said to have greater operating power and improved accuracy, are graphically described in Bulletin 6-10 titled "Pressure Recorders."

Ethyl Cellulose Lacquers. Hercules Powder Co., Cellulose Products Dept. (PI), Wilmington 99, Del.—The booklet "Ethyl Cellulose in Specialty Coatings" contains formulations for ethyl cellulose lacquers for specialty coatings.

Needle-Type Control Valves. Foxboro Co., Dept. PI, Foxboro, Mass.—Design details and operating characteristics of the complete Foxboro line of needle-type valves are explained in Bulletin 5C-13.

Pneumatic Controllers. Fischer & Porter Co., Dept. PI, 148 Jacksonville Rd., Hatboro, Pa. —Stack-type pneumatic controllers for process variables are illustrated with cutaway construction photographs, schematic diagrams, and dimension drawings in Catalogue 53-10.

National Safety Congress

(Continued from page 822)

woods employment supervisor for Abitibi Power & Paper Co. Ltd., Iroquois Falls, Ont.; Walter Lockhart, safety supervisor (woodlands department) for LongLac Pulp & Paper Co. Ltd., Terrace Bay, Ont., and Samuel P. Hoopes, safety director for Finch, Pruyn & Co. Inc., Glens Falls, N. Y.

Visual Aids Committee: J. C. Rodgerson, plant safety supervisor for Brown Co., Berlin, N. H. (chairman); R. T. Carter, industrial relations department of Abitibi Power & Paper Co. Ltd., Toronto; David W. Sowers Jr., research forester (woods department) for West Virginia Pulp & Paper Co., Hancock, Md., and J. P. Dixon, safety director for Chesapeake Corp. of Virginia, West Point, Va.

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Division Chairman: D. V. Hill, safety director for the Mead Corp., Kingsport, Tenn.

Publications Committee: Fred T. Morrish, safety supervisor for the Ontario-Minnesota Pulp & Paper Co. Ltd., Fort Frances, Ont. (chairman); N. C. Bellamy Jr., safety supervisor for the Carolina Div. of Champion Paper & Fibre Co., Canton, N. C.; C. C. Coughlin, safety director for Gulf States Paper Corp., Tuscaloosa, Ala.; Ernest Berryman, safety director and insurance administrator for Nekoosa-Edwards Paper Co., Port Edwards, Wis., and James Emmarich, safety director for Mosinee Paper Mills Co., Mosinee, Wis.

Visual Aids Committee: George S. Nelson, claims and safety manager for Consolidated Water Power & Paper Co., Wisconsin Rapids, Wis. (chairman); Marion L. Hodges, safety director for West Virginia Pulp & Paper Co., North Charleston, S. C.; B. A. Brown, safety director for National Container Corp., Ontonagon, Mich., and Charles R. Hagan, safety manager for Oxford Paper Co., Rumford, Maine.

Paper Manufacturing Division

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Publications Committee: E. A. Topmiller, supervisor of safety for the Champion Paper & Fibre Co., Hamilton, Ohio (chairman); Harry J. Hahn, safety director for Hammermill Paper Co., Erie, Pa., and Loren Thompson, safety coordinator for Marathon Corp., Menominee, Mich.

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Paper Converting Division

Division Chairman: Robert W. Gray, safety director for Union Bag & Paper Corp., Savannah, Ga.

Bag Manufacturing Committee: R. G. Belknap, personnel manager for Bemis Bros. Bag Co., East Pepperell, Mass. (chairman); John T. Warren, director of training for the Multiwall Bag Div. of St. Regis Paper Co., Pensacola, Fla., and Harold Hewitt, assistant personnel manager for Bemis Bros. Bag Co., Peoria, Ill.

Box Manufacturing Committee: A. O. Vranek, safety director for Container Corp. of America, Chicago (chairman); G. J. Bienvenu, general superintendent for the Container Div. of Gaylord Container Corp., Bogalusa, La.; Dennis Triplett, director of industrial relations for the Folding Paper Box Association of America, Chicago, and Forrest E. Kimmell, safety director for Sutherland Paper Co., Kalamazoo, Mich.

Roofing Manufacturing Committee: Carl L. Eddins, assistant insurance manager for the Flintkote Co., New York, N. Y. (chairman); Hugh M. Jackson, manager of the industrial health program of Johns-Manville Corp., New York, N. Y.; Thomas S. Tobin, safety director for Lloyd A. Fry Roofing Co., Argo, Ill., and A. W. Smith, personnel service manager for Bird & Son inc., East Walpole, Mass.

PULP MILL SUPERINTENDENT

Wanted for 600 ton Kraft Pulp Mill in paperboard plant. Must be competent and experienced. Salary open. This position is with a large company and is a real opportunity for a capable person. Address replies to Box 581, The Paper Industry.

JUNIOR CHEMIST, JUNIOR ENGINEERS

Large kraft mill in eastern Virginia has excellent opportunities for technical men in Laboratory, Operations and Engineering Departments. Experience in pulp and paper desirable but not essential. Salary according to qualifications. Address replies to Box 583, The Paper Industry.

Insulation Manufacturing Committee: Amos S. Keen, safety director for Armstrong Cork Co., Lancaster, Pa. (chairman); Russell Blum, plant personnel manager for the Flintkote Co., Meridian, Miss., and Budwin J. Lee, safety director for Wood Conversion Co., Cloquet, Minn.

Specialties Manufacturing Committee: Vincent P. Coulon, safety director for Sealright Co. Inc., Fulton, N. Y. (chairman); A. J. Hamblette, safety supervisor for Kimberly-Clark Corp., Neenah, Wis., and Jack Hartleroad, safety director for Kalamazoo Vegetable Parchment Co., Kalamazoo, Mich.

■

Coming Events

Tappi

Dec. 9—Ohio Section, American Legion Hall, Middletown, Ohio

Dec. 10—Delaware Valley Section, Engineers' Club, Philadelphia

Feb. 21-24—Annual Meeting, Commodore Hotel, New York, N. Y.

American Pulp & Paper Mill Superintendents Association

Nov. 18—Michigan Division, Hotel Harris, Kalamazoo, Mich.

Dec. 3-4—Pacific Coast Division (annual meeting), New Washington Hotel, Seattle

Dec. 7—Michigan Division, Hotel Harris, Kalamazoo, Mich.

Jan. 13—Michigan Division, Hotel Harris, Kalamazoo, Mich.

Jan. 27—Miami Valley Division, Middletown, Ohio

Other meetings

Nov. 15-17—American Standards Association, Fifth National Convention on Standards, Hotel Roosevelt, New York, N. Y.

Dec. 1-2—Forest Products Research Society, Great Lakes Section, tentatively scheduled for Grand Rapids, Mich.

Dec. 2-7—21st National Exposition of Power and Mechanical Engineering, Commercial Museum, Philadelphia

Jan. 24-28—International Heating & Ventilating Exposition, Commercial Museum and Convention Hall, Philadelphia

POSITIONS OPEN

We can place — Managers, superintendents, asst. and supts. in ground specialty, rag content, board, cellophane, and fine paper mills; tour bosses (several). Coating supervisor, salesmen and sales mgr. for mills and machine mfgrs.; supervisor bag mfg.; technical directors, chemists. Finishing foremen, project engineers, asst. purchasing agent, electrical engineer, mechanical engineer, master mechanics, designer and draftsmen; wet fiber board salesman, machine tenders, back tenders. If you are available for a position in paper or pulp mfg. or paper converting, *send us your resume.* It will be in confidence. No charge unless you accept employment through our service.

CHARLES P. RAYMOND SERVICE, INC.
Phone: LIberty 2-6547 — 294 Washington St. — Boston 8, Mass.

MOTOR FOR SALE

Used, in good condition, one Westinghouse 500 H.P., 240 RPM, 2300 Volt, 3 phase, 60 cycle, synchronous motor. Write Purchasing Department, P. O. Box 570, Savannah, Georgia.

FOR SALE — Laboratory beater, 10 lb. Dilts with washer and motor. Gas-fired, horizontal, rotating nine-gallon steel pressure vessel for pulping wood or fibrous material with or without Micromax Model R temperature recorder controller. Combs Gyratory Riddle with three 20-inch screens, equipped with 1/6 H. P., 115 V motor. A. B. Dick Co., 5700 W. Touhy, Chicago 31, Ill.

WANTED — SUPERINTENDENT. An excellent opportunity for a keen, energetic young man to join the staff of fine paper mill currently making rag content papers for commercial, Government and technical purposes. Successful applicant will act as Ass't Supt. for a period and when ability proven, promotion will follow. Remuneration commensurate with experience. Applications, which will be treated in strictest confidence, should be addressed to Box 576, The Paper Industry.

WANTED — AIR DRIER OPERATOR with experience on Clark Aiken Air Drier. Only men capable of taking full responsibility of machine and its operation need apply. Address: Box 577, The Paper Industry.

WANTED — MACHINE TENDER. Experienced machine tender required for fine paper mill making rag content papers. Only men capable of taking full charge of machine and its operation need apply. Address: Box 578, The Paper Industry.

WANTED — BEATER ENGINEER. Mill in Midwest making high grade rag content papers has vacancy for Beater Engineer who is also a good color man. An excellent opportunity for the capable man. Apply in first instance to Box 579, The Paper Industry.

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Machinery for Ground Wood and Chemical Pulp Mills.
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RONNINGEN FLUID FILTERS
For Fresh Water or White Water
QUICK AND EASY TO OPERATE
Quick Coupling, Non Short-Circuiting
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KIDDER ANILINE PRESS

PRACTICALLY NEW 42" 4-color Aniliner purchased in May, 1952. This press is offered for sale only because it has been replaced with a 6-color machine. Kidder's current price on the same model is $37,000 FOB Dover, N.H.; we are offering this equipment complete at $30,000 FOB our Atlanta plant on an "as is-where is" basis subject to prior sale. It is available for inspection by responsible printers. No agents.

POLLOCK PAPER CORPORATION
DALLAS, TEXAS

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All subscribers to The Paper Industry are entitled to free access to our Subscriber Information Department. This fulfills a long felt industry need for a source of industry information that may not be readily obtainable elsewhere.

If you have a question about machinery, equipment, materials, processes or methods, we will, within the limits of our ability, attempt to obtain factual answers or direct you to competent sources of information.

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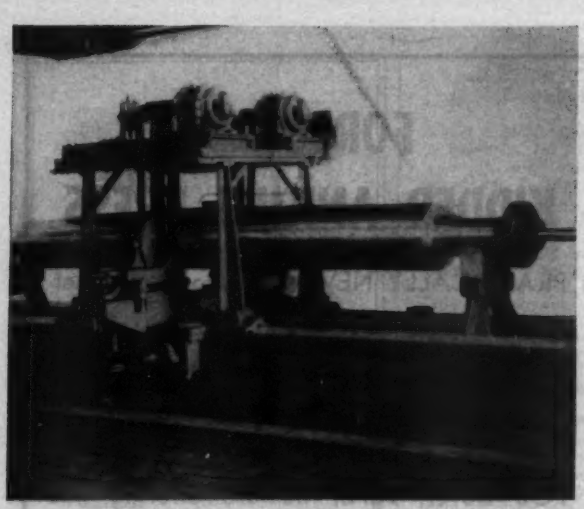

Tired of the Same Old Grind?

Or are you looking for a safer, better way to get your calender rolls back into shape? An economical solution to roll grinding problems?

Here's what paper mill men report about Red Label Oakite as a coolant for this delicate grinding operation:

From a large Southern mill:

- **keeps wheel soft; does not load up**
- **much easier to scale; rolls stay wet**
- **doesn't hurt hands**

From a Canadian mill:

- **prevents wheel chatter**
- **guards against wheel breakage and glazing**
- **provides temporary rust protection for rolls**

From mills all over the country . . . come similar reports of calender rolls that have gotten out of the same old grind. In addition to all these decided advantages, Red Label Oakite provides one more—low cost. Because low concentrations provide adequate lubrication, large solution batches are made up at minimum expense. Want details on this and other Paper Mill cleaning jobs? Write today for FREE 32 page booklet. No obligation. Address: Oakite Products, Inc., 68 Rector Street, New York 6, N. Y.

Technical Service Representatives in Principal Cities of U. S. and Canada

SPECIALIZED INDUSTRIAL CLEANING
OAKITE
MATERIALS · METHODS · SERVICE

MARKET QUOTATIONS

RAGS (Domestic)
NEW RAGS

The following are quotations to mills, f.o.b. New York:

	per cwt.
No. 1 White Shirt Cuttings	13.00 to 13.50
New Unbleached Muslins	15.00 to 15.50
Fancy Shirt Cuttings	7.50 to 8.00
No. 1 Percales	6.75 to 7.00
No. 1 Washables	3.00 to 3.25
No. 1 Light Silesias	7.00 to 7.25
No. 1 Light Prints	5.75 to 6.00
Light Flannelettes	7.50 to 7.75
Cottonades	3.75 to 4.00
Blue Overalls	7.50 to 8.00
Blue Chevlots	7.00 to 7.50
Canton Flannels, Bleached	11.00 to 11.25
Canton Flannels, Unbleached	11.00 to 11.25
Osnaburg Cuttings	9.00 to 9.50
Underwear Cuttings, Bleached	14.00 to 14.50
Underwear Cuttings, Unbleached	14.00 to 14.50
Khaki Cuttings—	
Sun Tan	6.75 to 7.00
Mixed	3.75 to 4.00
Linen Cuttings—	
American	7.25 to 7.50
White	13.00 to 14.00
Grey	13.00 to 14.00

RAGS (Domestic)
OLD RAGS

Quotations to consuming mills, dollars per hundred pounds, f.o.b. New York, follow:

	per cwt.
Roofing	
No. 1	1.10 to 1.20
No. 2	.80 to .90
No. 3 and 4	.60 to .70
Twos and Blues—	
Repacked	2.25 to 2.50
Thirds and Blues—	
Repacked	2.00 to 2.25
Miscellaneous	1.65 to 1.85
Whites, No. 1—	
Repacked	3.75 to 4.00
Miscellaneous	3.25 to 3.50
White, No. 2—	
Repacked	2.75 to 3.00
Miscellaneous	2.25 to 2.50

RAGS (Foreign)
ex dock New York City
NEW RAGS

	per cwt.
New Dark Cuttings	Nominal
New Mixed Cuttings	
New Light Silesias	
Light Flannelettes	
Unbleached Cuttings	
New White Cuttings	
New Light Oxfords	
New Light Prints	

RAGS (Foreign)
ex dock New York City
OLD RAGS

	per cwt.
No. 1 White Linens	Nominal
No. 2 White Linens	
No. 3 White Linens	
No. 4 White Linens	
No. 1 White Cottons	
No. 2 White Cottons	
No. 3 White Cottons	
No. 4 White Cottons	
Extra Light Prints	
Ord. Light Prints	
Med. Light Prints	
Dutch Blue Cottons	
French Blue Cottons	
French Blue Linens	
Checks and Blues	
Linsey Garments	
Dark Cottons	
Old Shoppers	

ROPE and BAGGING
f.o.b. and ex dock New York City

	per cwt.
Gunny No. 1—	
Foreign	4.25 to 4.50
Domestic	4.25 to 4.50
Wool Tares—	
Light	4.50 to 4.75
Heavy	4.75 to 5.00
No. 1 Scrap Bagging	3.75 to 4.00
Manila Rope—	
No. 1 large	6.00 to 6.50
No. 1 small	5.00 to 5.50
Sisal Rope—	
No. 1 large	5.50 to 5.75
No. 1 small	5.00 to 5.25
New Burlap Cuttings	5.75 to 6.25
Jute Threads—	
Foreign (Nom.)	6.00 to 6.25
Domestic	6.25 to 6.50
Strings—	
No. 1 sisal	4.75 to 5.00
No. 2 sisal	4.25 to 4.50
Soft jute	4.75 to 5.00
Mixed	2.50 to 2.75

WASTE PAPER

The following are quotations, dollars per ton, for No. 1 packing f.o.b. New York:

	per ton
Shavings—	
Hard White Env. Cuts.	115.00 to 118.00
Hard White No. 1	90.00 to 95.00
Soft White, one-cut	75.00 to 80.00
Soft White, No. 1	55.00 to 60.00
Coated Soft	40.00 to 45.00
Fly Leaf No. 1	25.00 to 30.00
Fly Leaf, Woody No. 1	25.00 to 30.00
No. 2 Mixed Col. Woody	20.00 to 25.00
Flat Stock—	
No. 1 Heavy Books and Magazines, Repacked	22.00 to 24.00
Mixed Books	16.00 to 17.00
Ledger Stock—	
No. 1 White	55.00 to 60.00
No. 1 Mixed (Colored)	35.00 to 37.50
Manilas—	
New Env. Cuttings	70.00 to 75.00
New Cuts, One-Cut—	
Extra Manilas	19.00 to 20.00
Manila Tab Cards, Free of Ground Wood	30.00 to 35.00
Colored Tab Cards	50.00 to 55.00
Kraft—	
New Envelope Cuttings	62.50 to 67.50
Tripled Sorted No. 1 100%	40.00 to 45.00
No. 1 Old Assorted	27.50 to 32.50
News—	
White Blank	65.00 to 70.00
Overissue	22.00—
No. 1 Folded	16.00—
Old Corrugated Containers	22.00—
New Jute Corrugated Cuts	26.00—
Mill Wrappers	15.00—
Box Board Chips	11.00—
No. 1 Mixed Paper	10.00—

CHEMICALS
f.o.b. shipping point

Alum (Papermakers)—	
Lump, cwt.	5.05—
Ground, cwt.	4.30—
Powdered, cwt.	5.10—
Blanc Fixe—	
Pulp, bulk, ton	100.00—
Dry, barrels	105.00—
Bleaching Powder—	
Drums, cwt.	5.00 to 6.00
Casein (Domestic Standard) 20-30 mesh (bags), lb.	
80-100 mesh (bags), lb.	27.00—
Argentine, lb.	22.00 to 23.00
China Clay—	
Domestic Filler	
Bulk (mine) ton	16.50 to 18.00
Domestic Coating	
Bulk (mine) ton	17.00 to 25.00
Imported (ship side)	
Bulk (lump) ton	20.00 to 30.00
Chlorine—	
Tank cars (wks) cwt.	2.92—
Gelatine (silicon), lb.	1.25 to 1.35
Glyc. (C.P.) drums, lb.	.29½ to .30
Litharge, powd. bbl. lb.	.16½ to .17

MARKET QUOTATIONS

	New York, per 100 lbs.
Rosin (Gum)—	
E	8.65—
F	8.65—
G	8.65—
WW	8.95—
Rosin (Wood), carlots, F.O.B. South	4.75—
Salt Cake—	
Dom. bulk (wks) ton	24.00 to 26.00
Imp. bulks on dock— (All. ports) ton	
(Nom.)	22.00—
Soda Ash—	
Bulk (works) cwt.	1.35—
Paper bags, cwt.	1.70—
Soda (Caustic)—	
Solid drums, cwt.	3.85 to 4.50
Ground and flake, drums, cwt.	4.25 to 5.00
Sodium Silicate—	
60 deg. 55 gal. drums, (works) cwt.	1.60 to 1.70
40 deg. 55 gal. drums, (works), cwt.	1.35 to 1.40
Starch—	
Pearl, 140 lb. bags, cwt.	6.35—
Pearl, barrels, cwt.	6.30—
Paper (fp.) bags, cwt.	6.35—
Powdered, barrels, cwt.	6.60—
Sulphur (Crude) (Mine) bulk, long ton	26.50 to 28.00
Talc—	
Dom. 100 lb. bags (mine) ton	35.00 to 38.00
Canadian	35.00 to 45.00
Titanium Dioxide—	
Barium Pig, bbls., lb.	.22½ to .23
Calcium Pig, bbls., lb.	.22½ to .23
Zinc Sulphide, bbls., lb.	11.50 to 12.00

WOOD PULP

Quotations on domestic and Canadian wood pulp, dollars per short air dry ton, delivered consuming mills including basis freight allowances, follow:

Bleached Sulphite	140.00—
Bleached Sulphite, Canadian	140.00—
Unbleached Sulphite	120.00—
Unbleached Sulphite, Canadian	120.00—
Bleached Soda	140.00—
Bleached Soda, Canadian	140.00—
Kraft, Bleached	145.00—
Kraft, Bleach., Southern	142.50 to 150.00
Kraft, Bleach., Canadian	145.00 to 150.00
Kraft, Unbleached, Northern	132.50—
Kraft, Unbleached, Southern	95.00 to 105.00
Kraft, Unbleached, Canadian	100.00 to 125.00
Kraft, Semi-Bleached, Southern	140.00—
Sulphite Screenings	72.50—
Sulphate Screenings	67.50—
Groundwood	82.50 to 87.50

Quotations on imported wood pulp, dollars per short ton, on dock American Atlantic ports with varying freight allowances, follow:

Bleached Sulphite, Swedish	135.00 to 140.00
Bleached Sulphite, Norwegian, freight allowed	138.00 to 140.00
Bleached Sulphite, Finnish, freight allowed	140.00—
Unbleached Sulphite, Swedish	115.00 to 122.50
Unbleached Sulphite, Finnish, freight allowed	120.00 to 125.00
Kraft, Unbleached, Swedish, freight allowed	105.00 to 110.00
Kraft, Unbleached, Finnish, freight allowed	105.00 to 135.00
Kraft, Bleached, Swedish, on dock	140.00 to 142.50
Kraft, Bleached, Norwegian	

PAPER

Quotations are mill quotations New York City

Boards—

Prices per ton, delivered, 10 tons or more:

Plain chip	75.00—
News vat lined chip	80.00—
Filled news	75.00—
Solid news	80.00—
White vat lined chip	125.00—
Chip tube and can stock	100.00—
Single manila lined chip	140.00—
Single jute lined chip	125.00—
Kraft liner	117.50 to 122.50

White patent coated:

.020	155.00—
.018	157.50—
.016	160.00—

Book Paper— per cwt.

Machine coated, two sides

70 lb. No. 2 enamel, 25x 38-500, trimmed 4 sides	4 cases $17.25 Carloads $16.80
45 lb. enamel, 25x38-500, trimmed 4 sides	4 cases $14.05 Carloads $13.10

Uncoated

35 lb. No. 2 offset, 25x38 500, trimmed 4 sides	4 cases $14.80 Carloads $13.85
50 lb. A Grade English Finish, 25x38-500, untrimmed	4 cases $14.05 Carloads $13.10
20 lb. envelope, 17x22-500, untrimmed	Carloads $12.40
16 lb. tablet, 17x22-500	Carloads $11.35

Rag Content Bond—

(White, 5,000 to 10,000 lbs., basis 16 lb.)

100% rag	58.80—
75% rag	45.45—
50% rag	36.20—
25% rag	29.70—

Rag Content Ledger—

(White, 5,000 to 10,000 lbs.)

100% rag	58.80—
75% rag	45.45—
50% rag	36.20—
25% rag	29.70—

Sulphite Bond—

(White, 5,000 to 10,000 lbs., basis 16 lb.)

No. 1	19.85—
No. 2	19.15—
No. 4	17.45—

Sulphite Ledger—

(White, 5,000 to 10,000 lbs.)

No. 1	20.20—
No. 2	19.50—
No. 4	17.90—

News— per ton

Rolls, Standard (Contract)	125.00 to 128.00
Rolls (Spot)	(Nominal)
Sheets	128.00—

Tissues (Carlots)— per ream

White No. 1	1.75—
White No. 2	1.35—
Bleached Anti-Tarnish	2.30—
Colored	2.00—
Anti-Tarnish Kraft	1.85—
Manila	2.00—
Napkins, quad-crepe (12½ lb. to M shts.) per cs.	.90—
Napkins, full crepe and embossed (12½ lb. to M shts.) per cs.	.90—
Toilet, Bleached (M shts.) per cs.	9.25—
Toilet, Unbleached (M shts.) per cs.	7.90—

Towels— per case

Bleached	6.80—
Unbleached	5.90—

Wrappings (Kraft)— per cwt.

Standard wrapping	8.00—
Butchers, counter rolls	8.50—
Standard bag, mill rolls	7.75—
Shipping sack, mill rolls	8.00—
Gumming, mill rolls	8.25—
Asphalting, mill rolls	8.00—
Envelope, mill rolls	9.50—

Mill operators say:

"We like the production picture we're getting with ORISKANY Felts"

From mills that are running the finest tissues right down the line to those that are producing the heaviest board, we hear the same story: "Production is up since we switched to Oriskany Felts!" Consistent quality and performance are maintained, even on the highest speed machines in operation today!

There are several good reasons why you, too, can select Oriskany Felts with confidence: We blend the world's finest selection of wools . . . and we make our own yarns under constant scientific controls. Step by step, through weave and finish and inspection, skilled craftsmen and the most modern equipment produce your felts to your exact requirements.

Our experienced sales engineers will welcome the opportunity to show you how you can fit Oriskany Felts into your production picture . . . to do the job *better . . . faster . . . at less cost!*

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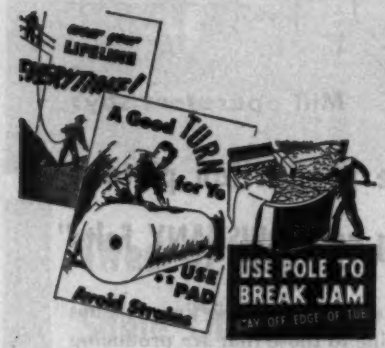
— A POTENT SAFETY TOOL



Posters should be one of the top aids in your safety program. No other safety medium can reach your entire audience—not once, but many times each day—with such low-cost safety messages. They are directed at the worker acts and worker attitudes that lead to accidents. Posters lend *timeliness, repetition and continuity* to your safety program . . . the three fundamental principles of direct selling.

The National Safety Council maintains a stock of posters that covers all industries, operations and phases of safety and health. These posters are produced in three sizes: "A" size, 8½" x 11½"; "B" size, 17x23"; and "C" size, 25x38". Their colorful illustrations and eye-catching captions make them ideal for the mass selling of safety.

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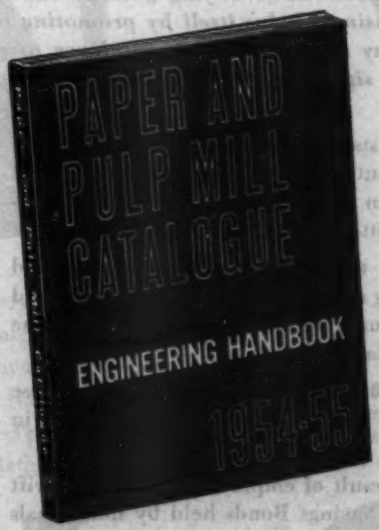

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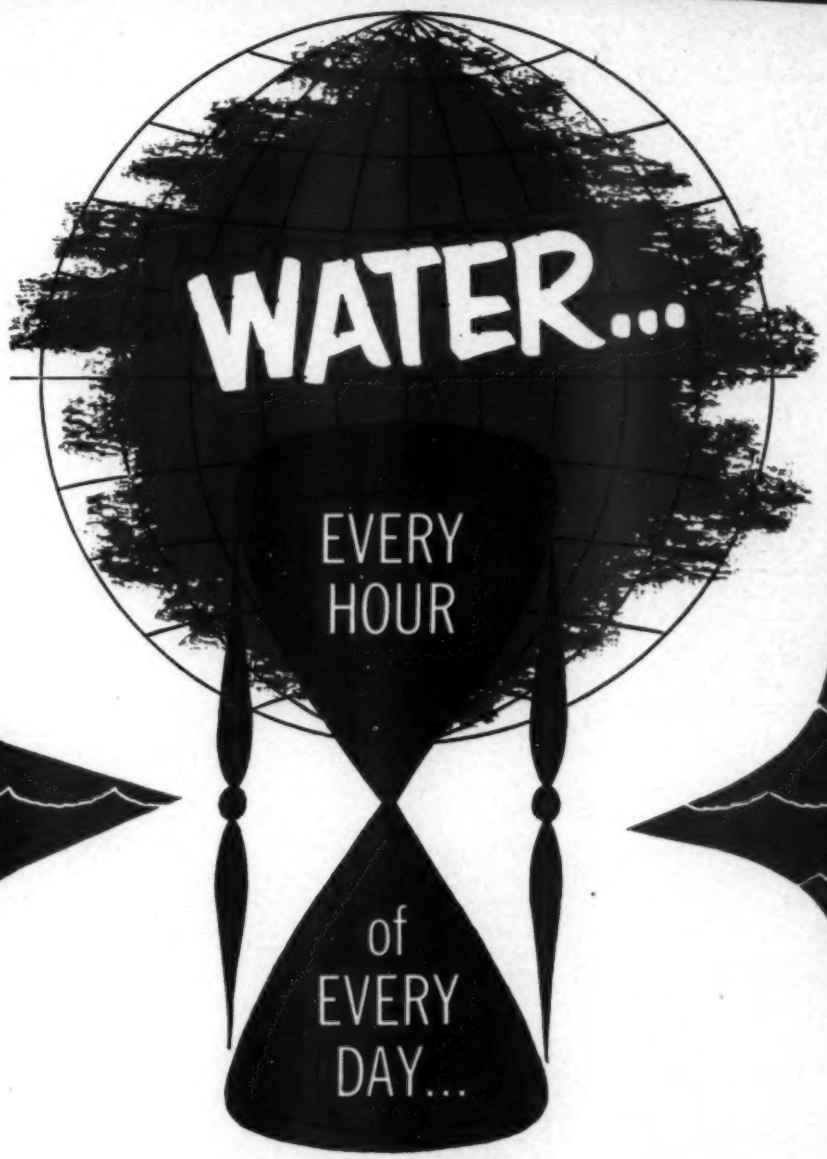

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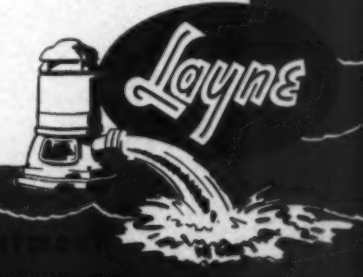

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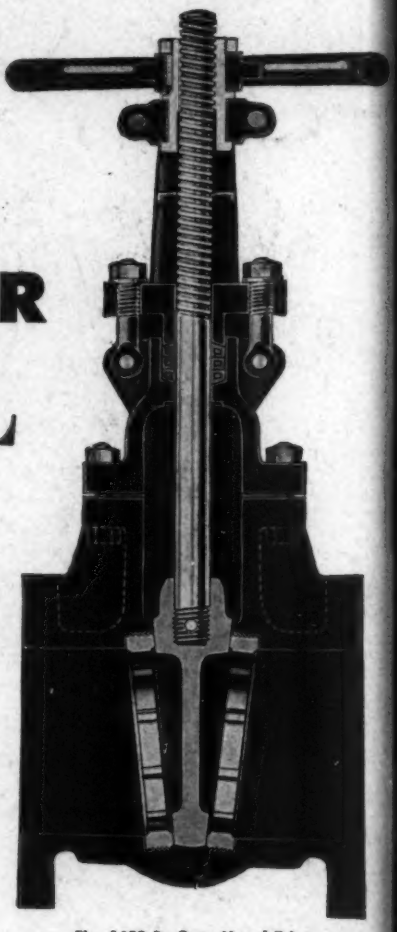

Fig. 1639-8—Gate Monel Trim

Fig. 1847-4—Gate 18-8 Mo Stainless Steel Trim

200 lb. W.O.G.

5 to 12 Inches

In corrosive valve applications, trim is a most important factor. If you can get *maximum* corrosion resistanee in the trim, combined with *useful* corrosion resistance in a less expensive body, you can save money in most services.

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"Causul" Metal is an exclusive Lunkenheimer development. Ask your Lunkenheimer Distributor for more details, or write for Circular 592 to The Lunkenheimer Co., Box 360 S, Cincinnati 14, Ohio.

Fig. 1708-8—Gate
Monel Trim

Fig. 1845-4—Gate
18-8 Mo Stainless
Steel Trim

225 lb. W.O.G.
Screwed

½ to 2 Inches

Fig. 1709-8—Gate
Monel Trim

Fig. 1846-4—Gate
18-8 Mo Stainless
Steel Trim

175 lb. W.O.G.
Flanged

1 to 4 Inches

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